

The background of the entire image is a cosmic explosion or nebula. It features a central bright white and blue starburst with radiating purple and blue filaments. A large, brownish-orange cloud is at the top, and a dark blue cloud is at the bottom. Numerous yellow-green lines radiate from the center towards the edges. The text is overlaid on these elements.

THE WHOLE SHEBANG

Paul Sand

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Part One

1 Big Bang

Someone in an adjacent garden is playing tracks from the sixties and seventies, when I was a young blade. It's barely spring and I've never known it so hot, day after day, even in the shade. If it wasn't for the heat, I'd shut the door to keep out the noise. At the moment, Simon and Garfunkel are joyously singing "nothing but the dead and dying back in my home town". It's hardly encouraging. I can't help listening to music but I've got to get on.

The Big Bang Theory begins my education
it's "the most comprehensive and accurate explanation
supported by scientific evidence and observation"
of the story of creation

Since I want to find out, as far as I can, how the world works, this seems a good place to start. Having spent a life writing songs, musicals and opera, I know nothing about science. But the fact that the theory is both comprehensive and accurate, gives me confidence. I'll be done in a jiffy.

An electric lawnmower has started to compete with David Bowie singing 'Sorrow'. I would like to give my neighbours sorrow. I always look forward to spring, conveniently forgetting that everyone comes out into their sunny gardens and starts making a din. Our garden is tiny but pretty. At the end, not twenty steps from the house, sits the little white cubicle I call my studio. And this cubicle seems to love the neighbour's lawnmower. It is resonating sympathetically, like an echo chamber, like being circled by a swarm of rampant bees. My granddad's old wooden chair is doing its best to absorb the frequencies.

Apparently the Big Bang model seeks to mix
the "independent frameworks of Einstein's Relativity and Quantum Mechanics"
(just reading this makes me feel brainy)
and since we know, due to 'redshift' (whatever that may be)
that the universe is expanding fast
everything must have been closer in the past
thus, extrapolating backwards, we can say
that the universe is 13.75 billion years old
happy birthday

Science, however, can say nothing of the start
as the laws of physics fall apart
(I must admit that's quite a blow
the start is what I want to know)
never mind, 13.75 billion years ago
there's a 'singularity'
and the universe is filled with energy
expanding and cooling rapidly

This is the Big Bang Theory
charting billions of years
where out of nowhere
the universe appears

(I should ignore the silly rhymes that pop into my head. I blame decades of songwriting.)

Okay, something called a phase transition leads
to a plasma where particles and antiparticles crackle and pop
created and destroyed at relativistic speeds
I wish that bloody lawnmower would stop

Don't worry when you don't understand, Paul
afterwards you can make a list
just try to zip through it all
and get the gist

An unknown reaction called baryogenesis
leads to a small excess
of matter over its antimatter twin
so antimatter's loss
means matter can begin
to make itself the boss within
our burgeoning cosmos
thank goodness the good guys win

All these words make my brain weary
but I shall not be afraid
cos it's the Big Bang Theory
where the universe gets made

I can't help it, there's too much noise. I'm going to have to close the door, however hot it gets.
Good, that's better. Where was I?

Right, "symmetry-breaking phase transitions
cause quarks and gluons to form baryons
such as protons and neutrons
but now there's mayhem
two mass annihilations
where protons condemn antiprotons
where electrons knock out positrons
(I've heard of some of them)

We're only a second after there's nothing
and already so much is happening
amazing

It's the Big Bang Theory
and without any doubt
it's the origin of the universe
and we've worked it all out

After a few minutes have gone by
when the heat is down to a billion degrees
neutrons and protons find conjugal bliss
forming the first atomic nuclei
in the Big Bang Nucleosynthesis

Sitting in this little white oven is steaming my brain. I can still hear the music, where some cruel satirical god has chosen the Beach Boys' 'Good Vibrations' as a suitable counterpoint to the lawnmower. Ignore it!

After three-hundred-and-seventy-nine-thousand years
electron and nucleus coheres
the first atom appears
and

Shit, my wife is waving at me. I'll have to answer her. I shouldn't think like that. Denise is wonderful. If it wasn't for her, nothing would be possible. It's a marriage made in heaven, albeit lived on earth.

"What is it darling?"

With the music and the lawnmower it's hard to hear.

"What?"

I nip across the strip of lawn and up the steps.

"Sam's coming home!"

"To visit us?"

"To stay. Isn't it wonderful?"

"But he's only been away a few months."

I hear the grumpiness in my voice and Denise hears it too.

"Are you working?" she asks.

"Trying to."

Despite myself, I swallow as I speak and blessed Denise ameliorates.

"Well alright", she says. "Sam can tell you all about it tonight at the party."

"What party?"

"Your sixtieth birthday party."

She kisses me. I mumble and trundle back down to my vibrating box. I didn't know there was going to be a party. Just a meal I thought.

Put it out of your mind, where was I?

yes, we have atoms now and the firmament
is made of matter, our kind of stuff
but that's only 4.6 percent
'dark matter' makes up 23
and its friend, 'dark energy'
a mysterious force we neither perceive nor comprehend
comes in at a whopping 73
what's going on?
you can't just add stuff like that at the end
that's 96 percent
don't get angry
it probably means something important
calm down
they know best
read the last paragraph
and lay it to rest

It's like a furnace in here. Head hurts, mouth dry. I'm sure I can understand this if I try.

Over a long period of time
the regions that are slightly more compact
gravitationally attract
growing ever denser till they display
the forms, the gas clouds
stars and galaxies
we know today
hooray
it's colossal, it's stupendous
it's the cosmic dawn
it's the Big Bang Theory
where the universe gets born

The only thing wrong with the story
is they don't understand the start
and that's the best bit
and I don't understand any of the words
shit
okay, don't panic, keep your nerve
after all, Paul, this is a learning curve

Things to work out: ionisation

redshift, inflation, gravitation

cosmic microwave background radiation

isotropy and homogeneity

thermodynamics

Einstein's relativity

quantum mechanics

chemistry

physics

Oh my God, she's waving again. Open the door. The lawnmower's stopped. The music's stopped. A bird sings. Bliss!

"What is it Denise?"

"Your first lesson's here."

A teenage face pops out from behind her. Think quickly.

"Hi Robert. Just hang fire for a tick and I'll be with you."

"Shall I wait here?"

"Yes. Wait there."

Got to defumigate my white box. Full of cigarette smoke. But how can I leave this work? Look down the list. Who knows? Complete it tomorrow. Then? Just start working through, trying to understand.

I'd like to start with easy things

'redshift' would be fine

but if I'm really serious

I should begin with Einstein

trouble is that's scary

I don't want to feel more bad

cos I've seen pics of Einstein

and he looks barking mad

A tall geeky-looking adolescent is peering down at me. I leap into action. Work away. Lesson notes out. P.A., speakers, amp, mixer, computers and piano on.

"Take a seat Robert, while I set things up."

"Cool."

Robert's a really nice person and sings quite well. Just fatally insecure. Scared of his own shadow. As am I.

I wish I could sleep. The birthday dinner was lovely but all I could think was how to understand the science. Just need to get out of the house. Take the dog up to the Downs and look at the stars. It's a lovely warm night. I shouldn't be doing this stupid project. Nobody understands anything really, do they?

The thing is, I am interested, fascinated. I was as a kid, until life intervened. – So do what you're interested in. – There's nothing to do, I can't understand science, it's an old man's folly. – But you promised you wouldn't argue the toss again, when Delilah died.

I've got to work this through. Now. There's a bench, it's warm enough to sit down. Brighton's a lovely city to live in. There's the sea and the hills, always something happening, hoards of bikers, ancient cars, festivals. The pier is twinkling below and the lights along the prom. I like it here.

Thing is, I'm feeling odd, nothing seems real, as if I'm floating. As if I'm just playing at being alive, as if I've always been acting. I know that underneath I have no beliefs, no religious or scientific faith, no political, social or moral persuasion. Not really, not even a sense of right or wrong. Things are just as they are.

If I had some real beliefs, perhaps I'd be more purposeful. I need to be more purposeful. Other people seem to have beliefs. But then people fight wars for their beliefs. What do I know? I can't take sides. I've never been able to. And I've never been able to join. Maybe I'm just incomplete or maybe it's my background.

I'm the son of an Austrian Jew who fled Austria at the outbreak of world war two and joined the British army, who settled in London after the war and married an English rose he met at teacher training college. Margaret and Eric.

I must remember their past when I see them next week. It's all too easy to get drawn into their squabbles, to rise to Eric's desire to argue rationally, or react to Margaret's denial of anything that doesn't conform. And they're old now.

When my mother was a little girl, her childhood friend, interestingly also called Eric, died and she wasn't informed for days. Each time she's told me this, I've sensed that this was an early tragedy that somehow marked her. Later, apparently, she asked her dad, Alf, if he believed in God. And he said "I could never believe in a god that would take that little boy away". Later still, Mum said she would look out of her window and think 'there must be something more than this'. And then came the war.

Neither of my parents hold religious beliefs and for profound psychological reasons. Both embraced rationalism, agnosticism and socialism which, to them provided a water-tight ideology from which I rebelled. It seemed, at the very least, unimaginative.

Furthermore, growing up in bankrupt Britain in the post-war years, with its fractured class system and increasingly multicultural demographic, I was introduced to umpteen different belief systems. My school mates were of different classes and colours. My friends were few. Why?

Because I was a little fat amorphous middle class boy who got beaten up and taunted most days, at least until I was eleven. That'll teach you not to take sides.

But I haven't just sat around. At 18, I was an actor in the West End. At 21, married and travelling to the other side of the world. I've run an art agency, printing company, written or co written 30 or more shows or operas for different companies and in the last 30 years remarried and brought up 2 children.

And that's no easy thing to do. Sam hated school and left at 16, after Denise found him with an axe, which he was taking back to school to confront his art teacher. Dandy loved school and is presently two terms into a 3-year costume-making course at Wimbledon.

Why am I trawling through all this? The point is, now our parents are old and our children have grown up. For the first time in decades, I have choice.

I have choice. That's why I feel odd. I've no belief system, no sense of what to do and no need to do it. After five years of school teaching to be close to my kids, I've not wanted to return to writing shows. My income, as one-to-one music teacher in Brighton, is sorted. But I can't just go round and round. Choice. The very thing I craved for in my youth and now I don't know what to do with it. I've written another novel to get my hand back in, but put it in a drawer. Something wrong with it, no heart.

I've punished myself. Walking the dogs on the Downs, repeating under my breath, 'what do you want to do, make a decision, do something'. I started reading scientific and other academic tomes and found myself thrown back on my amorphous self. What is it with religion, with politics, with science? Why do people behave as they do? Is anything worth believing? What is real?

What is real? I couldn't believe the passion with which I pursued this 'quest' the moment I'd framed the question. And yet I didn't know how to start or why anyone would be interested. Do it for yourself, I'd say. But I don't know what the journey is, I'd argue. And so on. And then our old dog, Delilah, died. Denise said it was an omen, since we have six loved-ones now in their eighties or older. Denise nursed Delilah the last night. Walking Smilah next day, I told myself not to mess about anymore. Just get on with it. And that's what I must do. Get on with it!

Where's the dog gone? I can't see a fucking thing. Smilah?

Redshift tells you how far away things are
like the frequency shift as a sirening police car
passes, only measuring light-shift from a distant star
so 'cosmological redshift' watches the universe expand
simple when you understand

Homogeneous and isotropic mean that everything's the same
everywhere you look it's symmetrical, it follows the norm
the theorised expansion, 'cosmic inflation' by name
explains why a Big Bang could be uniform
while baryogenesis is a hypothetical process that they claim
would explain how things can be different as well as the same
I understand their aim

Dark matter would explain gravity and all the laws would knit
but unfortunately at the moment it's still undetectable by us
and dark energy is hypothetical but everything would fit
if it could make the universe expand faster, like it does
and that's it

The Big Bang Theory
and it's easy if you try
it's the Big Bang Theory
I don't get it really
I just want to die

2 Einstein's Dream

"a human being is a part of a whole
...a part limited in time and space
he experiences himself, his thoughts and feelings
as something separated from the rest...
a kind of optical delusion of his consciousness
this delusion is a kind of prison for us
...our task must be to free ourselves from this prison
by widening our circle of compassion
to embrace all living creatures
and the whole of nature in its beauty" *[Albert Einstein]*

I awake to the sound of seagulls and pink light flooding through the open doors. It's very early and I'm alone. A breeze stirs me from the big white bed in this little white bedroom facing South Downs and sea. A liquid sun floating on the hilltop opposite draws me onto the top deck. No one in sight, just pink sunlight.

Denise was going to be here today. We were going to collect my parents and take them down to Hayling Island to visit her folks. At the last minute she has a job, playing the white mother of a Muslim family in a play for the Forgiveness Trust. So Denise is in Derby and it's my task to put the parents together.

The deep valley below is steaming, seagulls soaring, heat rippling from the hill beyond to the dazzling blue sea. It's far too early to leave yet. I'll get a coffee.

Dandy's asleep upstairs, back for Easter, loving her costume course. The kids won't be up for hours, they were late-night gaming in Sam's room. They laugh a lot, lovely to hear. Strange being the middle generation now, you see the span from young to old. I'll spend a day with the oldies, being gentle and careful and come back to my two, crashing about.

My granddad used to say "it seems only yesterday" about anything he remembered, whether it was eighty years ago, or it really was yesterday. It's just one continuous experience I suppose, and it's only when you look back, or when you see your children grown, or your parents old...

Tiptoeing through the quiet house with half a pint of mocha in my hand, cigarette wagging between my lips and Einstein's Relativity causing little bomb-blasts in my brain, I settle into the rocking chair out on the top deck. Next door, Bert and Jan's great cherry tree is in full blossom. They planted it when they married, forty-something years ago. And now it's a pillow of downy feathers, a bank of glittering snow, a beautiful sight.

Everything starts with light
Einstein's ideas keep whirring through my head
simply trying to grasp the sense of what he said
I've not found anything more exciting
and what is most inviting
is that everything he says feels right

So many creation stories
each of them brimming with insight
none proven as yet, who can say who's the boss
and proof is the slowest thing in the cosmos
whereas light
light is inspirational stuff, pure energy
the universal constant

c

It's the speed of all massless particles in free space
of all energy, of force and field, of time and place
aged 16, Albert Einstein has a dream
he's travelling with a light beam
and at this speed he witnesses
that no space surrounds him
and no time passes

When, aged 26 he predicts
that as you approach the speed of light
time will slow down, actually slow down
no one can imagine it, it can't be right

Decades after he died
it became possible to test at last
they took an atomic clock
gave it a whiz round the block
checked it with one on the ground
and, shockingly, found
that for the one that went fast
less time had passed
it seems that energy is the universal seed
and time is the inverse of its speed

c

C is the speed at which space and time cease
imagine a primal state, where all energy
oscillates perfectly at 'c'
no cause and effect, no event
where, somehow
energy is anywhere at once
in a primordial present moment
now

now
is still with us
in fact it's all there is
constructs of past and future
infinite numbers ticking off eternity
pale to insignificance when they do not allow

now
it may as well be infinity
now has no time no mass
yet it is all there is, alas
and the speed of now is exactly

c
reckoned
at two hundred and ninety-nine million
seven hundred and ninety-two thousand
four hundred and fifty-eight meters per second
any less and energy materialises, the world arises
the exquisite state of symmetry dissolves
and in that fall from grace
time begins
and space
evolves

Well that's just me being poetic. The thing is, Einstein's ideas are not difficult, but they are overwhelming. Yesterday I wrote a check-list to take with me today. What time is it?

Late. How could I do that? Keys, coat, cash, card, dog.

"Out you come Smilah!" She needs no encouragement. Races over to the car, wagging her tail. Never wanted dogs. Denise brought Delilah back after I said I didn't want a third child. Fait accompli. But she was right. The children have loved the dogs. It was my mother in me, wanting everything neat, tidy and uncontaminated by life. My mother, whom I'm about to see.

I've left a note for the kids saying back tonight, on mobile if you need me, love dad. Got the mobile and dog lead. "In the back Smilah. Good girl."

If the roads are this empty, I can make up the time. I love Brighton. Graveyard of ambition, they call it. Good. Never thought I'd belong anywhere. Now I get a pang when I'm leaving it. I also like the M23. No speed cameras as yet.

If I make best use of my energies, I could have a lovely relaxed day with Mum and Dad and Stella and Don and, in between, think my way through both theories of relativity as a kind of antidote. The thing is, not just to say what the theories say, but to understand. Go on then, start. The faster I go, the less time passes. Zooming along through the milky morning, time to percolate Albert's ideas and the world they present.

As fields, woodlands, villages fly by
I'm aware of flowing through
a world of infinite numbers of 'things'
but chemists say these are buildings
made from just 92
the periodic table lists these elements
from the lightest atom of hydrogen
with one proton and one electron
up to the heaviest brute
uranium with loads of them
and neutrons to boot

From infinity to 92
is amazing, I'm impressed
but I'm wondering
if there's one thing
that fashions all the rest

Historically
the world divides around 500 BC
when Heraclitus has the notion
that everything's in motion
this idea goes east and develops a maze
of mystical insights and spiritual pathways

While Democritus and the atomists
claim that a fundamental particle, the atom exists
this idea comes west, finding its appliance
as the basis of western science

But we now know that atoms
are made of at least 3 things
all of which are moving
protons, neutrons and electrons
so is there a 'one thing'

There is one fixed point in our spacetime continuum
and that's the speed of light in a vacuum
whichever perspective you follow
whatever is moving, fast or slow
it always remains just so
and it's the fastest speed we know

Everything else is relative
so it's hard to get a fix
only the speed of light remains
on which to build the mathematics
but, while this is worth pursuing
light is not a thing
it is an energy
not a being
but a doing

And this is Einstein's genius
I knew the equation but it's hard to grasp
as I begin to understand
it simply makes me gasp

I imagine a line like this motorway
at each end an extreme
say, from black to white
through all points grey
except that, in Einstein's scheme
the line is drawn between energy and matter
where the former may become the latter
and equally
matter may become energy

That's how a Big Bang singularity
a burst of energy
can become the universe
and the reverse
how splitting an atom
can melt a whole city

I was in Nagasaki
doing research for a show
being shown the extent of it
walking through the Peace Park
with the city below
pictures of burnt bodies
mile after mile
had to leave the group
hide in the bushes
and weep for a while

Albert was contrite, he said
if he'd known of his part
in unleashing that energy at the start
he'd have become a watchmaker instead

It seems that matter – solid, liquid, gas
is energy bunched up tight
while, conversely, energy is mass
heated to the speed of light

In Special Relativity, 40 years before those atom bombs
make his theory indisputable
Einstein tells us that energy and mass
are equivalent and transmutable
and this idea is aired
as the equation $E = mc^2$

Energy = matter x the speed of light
is a simple but world-shattering insight
how can waves of electricity
become rocks and planets and you and me
even now scientists publish articles
describing their search for 'fundamental particles'
because it's an insult to science, it sucks
it says the atomists were wrong and "all is flux"
but insulted or expedient
I've scoured physics for an added ingredient
which differentiates insubstantial energy
from solid matter – and there isn't any

And there's more on that line
between being and doing
to undermine my point of viewing
young Albert has a dream
travelling with a light beam
as he approaches this extreme
time slows down, space recedes
they only emerge at lower speeds
it's a matter of perspective I'm told
but however patient, however gentle
I am with myself, the idea won't take hold
how can time and space not be fundamental

And yet a checklist on the passenger seat
lays it all out short and sweet

The faster I travel
the slower time, for me, will go
until, at lightspeed, the journey ends, the mind clears
time contracts to zero, space disappears
and I expand to fill all of time and space
become the boundless infinity
seems good to me
but for another, relatively stationary member of the human race
I contract to zero, I cease to be
that doesn't sound so great
and from my perspective in this car
I'm still 15 minutes late

Zig-zagging through the increasingly busy streets of greater London, wriggling towards my parents' house in Hammersmith, I find that this is now one-way, that road's closed. I should have gone the other way, through Shepherds Bush. Mind you, that could be just as slow. Hard to look down at my list without bumping into the Fiat in front.

Sod the list, the point is
no scientist will contest
that energy is the one 'thing'
that fashions all the rest

But this is a world of illusion
where energy masquerades as mass
turning down Hartswood Road, it's time
to be peaceful and present and switch off the gas
I'm about to be with Mum and Dad, which is great
but they are going to seem very slow, so I ought
to get out of this infinity-boundless state
and into infinity-nought

Okay, here we go
car's locked, have I got everything?
Smilah on her lead, up the garden path
ring their doorbell, which is ear-piercing
Mum's deaf and slow coming to the door
no thinking for ten hours or more
give yourself up for a while
and smile

3 Relatives

Mum's first words are, oh you haven't brought that awful thing. Meaning Smilah.

Yes Mum.

But how will we all fit? I'm not travelling with her jumping all over the place. I'm too old.

She'll go in the boot, Mum.

I use the moment to get past her, carefully reining Smilah in. If she got under foot, Mum'd be gone in a flash.

Where are you going with her? She'll put hair everywhere.

I've got to let her out in the garden.

But she'll foul it up. I'm not going round picking up dog mess.

I'll clear it up. Where's Dad? Is he ready?

Thing is to throw a barrage of questions at her, while I get the back door unlocked. Three locks for one door. Margaret never feels safe unless she's locked in a prison. Paradoxically, she can become very jolly when she's out and about. If I can just get them in the car, on the move, her fears and trepidations might abate.

This is the garden of my childhood. The sandpit was over there. Our family name is Sanders. Not really, Dad's was originally Schwartz but he had to change it in the war. In my turn, I shortened Sanders to Sand. And whenever I think of sand, it's the little sandpit in this garden. I'd play in it for hours, creating hills, valleys and waterways.

I can hear Mum in the house shouting at Dad. Aren't you ready? We're late as it is.

The garden is a strip. All the lines are straight. All the angles are right angles, no wrong angles. And all the plants are pruned within an inch of their lives.

There used to be a large concrete air raid shelter in the centre and a cherry tree in the far corner, with big red juicy cherries.

Turning, I notice Mum and try to hide my cigarette. Too late.

Cigarettes! I thought so. You'll kill yourself.

Stop it Mum, I say placatingly, coming towards her.

Don't you come near me. I'll never get rid of the stink. That's my deepest fear. You'll die before me.

I won't die, Mum.

Well I will. And I'll be better off for it.

Don't say that Mum.

Dad peers out from the back door. Oh there you are, he says. Thank goodness he's arrived.

Hi Dad. We embrace.

Dad immediately starts telling me about his book launch. Somehow, as he talks, I get the lead back on Smilah, the back door gets triple-locked, small gifts for Denise's parents are remembered and, front door double-locked, we're at the car. As I ease Mum into the passenger seat and fix her safety belt, Dad gets in the back, without drawing breath.

When Dad had just retired, he went back to play in a last teachers-versus-kids soccer match and someone kicked his eye out. He's got a glass eye now, which moves, so he looks quite normal. But it was such a shock to him. I saw him in the hospital next day. Growing up in Vienna, he'd written

songs and an operetta, which the Theater an der Wien were considering for production when Hitler marched in. So that creative life was abandoned. He still wrote songs when I was growing up and it's why I write them. But in the hospital bed, the day after he lost his eye, he held me close and told me very emotionally that from now on he would write again. As if time were of the essence, he hasn't stopped in the thirty years from that day to this. He wrote articles, then he wrote plays. He wrote a screenplay about the Egyptian leader Nasser and had to pretend he wasn't Jewish at its Egyptian premiere. In the last few years, his own life story has become of interest, particularly in Austria, where they are finally coming to terms with what was done. Two years ago, the family went to Vienna for the launch of his memoirs. There was a very moving ceremony at his old school, which he'd had to leave from one day to the next, because he was a Jew. Anyway, the English version is out this summer and Dad's so excited he can't stop talking about it.

Not that I want him to. But we're almost out of London already and Mum's sitting in silence beside me. She's deaf. If he'd just be quiet for a moment, I could ask Mum a question and include her. But it's not going to happen. One story leads to another.

Put a CD on. I've brought a CD of the Comedian Harmonists, which I don't think Dad's heard. They were a wonderful German harmony group who had to disband since 3 out of the 6 were Jewish.

I know that putting this on will mean I can't speak to Mum. But it will stop Dad and change the mood. On the other hand, 'Mein Kleiner Grüner Kaktus' is blaring out and Dad hasn't noticed. Mum has.

What's that terrible noise? she cries out in alarm.

Now Dad's noticed and started to sing.

I shout in Mum's ear, telling her about the Comedian Harmonists. She listens, realises that it is music and starts to sing along, la la la la la, in an entirely different key, possibly an entirely different universe. But thank goodness. Even amid the caterwauling crumbles, this ageing wrinkly can find a moment's peace.

Denise's parents, Don and Stella, whom we're off to meet, have a different take on the world. For one thing they are conservatives, whereas my folks are labour. This means little to me but more to them and it's a topic I want to avoid when they meet.

When I first met Don, he told me that some kids had been at his privet hedge and he'd a mind to line them up and shoot the lot of them. His lovely wife Stella said to me, you're a Jew. Of course we've got nothing against Jews. To which Don added, we fought a war to save them.

I was not approved of. I'd been married before, was seven years older than their daughter and, perhaps worst of all, I worked in theatre. They'd spent a lot on Denise's education and psychology degree and now she was going to throw it all away.

However, after we were married, it changed. Don's a navy man, an engineer, an officer, blunt and autocratic by profession. But his nature is kind and considerate. Increasingly, in old age, he is philosophical, entertaining new ideas and approaches to life. Stella is very reactionary but, luckily, she has never used her mind and so has never had to change it. Age has softened her lines for her.

If it's up to me to kickstart conversation between the two aged couples, we're likely to sit in silence. Even as we cross the bridge which links Hayling Island to the mainland, I'm racking my brains to no avail. Luckily smalltalk and the polite formalities of a bygone era take over.

Would you like a sherry, Margaret? asks Don.

Margaret says she shouldn't but then she says she will. This is a good sign, as Eric likes a drink and, if Margaret is drinking, she can hardly chastise him.

Denise's mother, Stella, has a wonderful way of starting one story and, a few minutes in, being reminded of a second story which, by the same process, becomes a third, and so on. Before I became familiar with this, I'd watch Don and Denise tiptoe out, leaving me to nod occasionally for half an hour or so. She never explains who the people are, so even if you're not drunk, you might start to feel drunk. Eric, his sherry topped up by Don, smiles happily and nods.

Don, realising that Margaret is deaf than she was, shouts at her about the Mulberry Harbour. He's taking us to the Ferry Boat Inn, where we can see the harbour. My mother nods enthusiastically, without convincing me that she knows what he's saying.

Nonetheless, we're soon on our way to see this harbour. By the time I've helped Mum out of the car, Don is regaling Eric with details of its construction. To my surprise, Dad is interested and quite knowledgeable. They all are.

Prior to the D-Day landings of 1944, the area around the Ferry Boat Inn was used to construct sections of Mulberry Harbour, the massive floating harbour that was towed to France as an integral part of the landings.

I can't see what Don is showing us. That's because it's not there anymore. It's in the past. But they can see it. Margaret says she was working in the Wrens, at Admiralty House, in the lead-up to D-Day and knew all about it. They all remember where they were then and soon we're inside the inn, ordering slap-up meals.

Throughout the meal, course after course, the war stories continue. It's strange to me, brought up in the hippy sixties, to think of these four people, our parents, forged by war. I've watched it in their behavior over the years. When Denise met my parents, thirty years ago, she was astonished to realise that there were often more simultaneous arguments going on than there were people present. Mum and Dad both need a fight before they feel comfortable. No arguments here today though. Don, Stella, Margaret and Eric are back in the 1940s and their faces look all the younger for it. Stella keeps repeating 'aren't we lucky' and I suppose they are.

Unfortunately a little devil has been growing inside me during the meal and I can't resist it.

Funny that you all talk about war so gloriously, I say, quickly adding, I wonder what my generation will talk about in years to come. Unfortunately we couldn't muster a war of any great stature. Probably we'll just have to sit around chatting about pop music and drugs.

The effect is amazing. Like a red rag to a bull.

Your generation! Dad snarls, and the others move in, like ancient wolves for the kill. Moral ascendancy will out. It's all very well to talk about peace, once the peace has been made. What price freedom? Suddenly I'm hippy in the middle.

Yet behind their outrage and their wholly understandable criticisms of my hippy-trippy generation, something deeper lurks. Our youth marked the end of their youth and it is only by prostrating myself at the end of this glorious meal, appeasing them with apologies, that they rise, unsteadily but victorious once more, bill paid, and stagger out of the Ferry Boat Inn to take a last look at the Mulberry Harbour that used to be there.

Don and Stella invite us back but Margaret doesn't want me to have to drive to Brighton in the dark and Eric is drunk. So we say our goodbyes and wave and leave. Is Stella alright? asks Eric. I

think so, I say. Why? But he strikes up with “lieblich mein herz lässt dich grüßen” and soon he’s snoring. Mum also asks about Stella. Well, I say, her mind sometimes goes round in circles now (when didn’t it?). But a little look of fear flicks across Mum’s face and I understand that she’s afraid for her own mind. So I ask her what she’s been up to lately and she tells me the history of Renaissance art, which she’s been learning. Mum’s always loved art. She’s happy now and good company.

Having delivered them home, I head for home myself. It’s hard to get my mind back in gear after all that chit-chat and food. But Einstein is calling me. As real as the Mulberry Harbour and the need for law and order is for the oldies, so, child of my times, ‘relativity’ is real for me.

I don’t see a fight between opposing forces
good against evil, wrong versus right
I see lines connecting all extremes
a flexible world where matter is light
and I think this insight is urgent
where all points of view
are, from their perspective, true
where space-time itself is emergent

And it is the real world
as NASA’s data charts
atomic clocks aboard a shuttle
run slower than their earthly counterparts

Since speed determines time and space
and forms exist at different rates
space-time fluctuates
from pure energy to massive mass
the whole darn thing is warped, alas
there is no fixed perspective
no way to be ‘objective’

Enter General Relativity
and the question of gravity

Once, 5 separate forces were observed universally
there was magnetism, electricity
the weak and strong nuclear forces
and gravity
now the first 4 are seen to comply
all being electromagnetic energy
but gravity’s still a mystery
Einstein thinks he understands why

He senses gravity isn't real
but an illusion
and employs the law of inertia to deal
with the confusion

Okay, on the motorway now
clear from here to the ocean
time to consider 'inertia'
as defined in Newton's first law of motion

An undisturbed object will just keep on going
will neither slow down nor put on a spurt
if at rest, it will remain at rest
either way it's inert

Einstein agrees with Newton (good chap)
it's why gravity can be rejected
as a conceptual trap
since the law of inertia's unaffected
but surely that's crap
a free-falling object is seen to step on the gas
drawn by the gravity of the larger mass

Okay, says Einstein, but listen
(he and I get along fine)
remember that time and space increase
along that energy-matter line
so, instead of defining event or place
consider a grid for time and space
like the warp and weft of a fabric, say
or a spider's web if you prefer
where the weave loosens around massive bodies
so in less time, more can occur

And since matter exhibits inertia
and mass and energy are both electromagnetic
energy must also stretch and shrink
as an integral part of this fabric

So what? I ask
well just think! he snaps
(he's pissed off with me now)
time to think for myself perhaps...

Okay, sat aboard a plane
I understand the notion
that I am not contributing
to its forward motion
I'm inert (my favourite state)
when I fall out and start plummeting
I am likewise doing nothing
but will I accelerate?

Classical mechanics has it
that inert objects don't increase their speed
but this sensible law
is something free-falling objects choose to ignore
with a kind of depravity
which leads us to believe in gravity
which Einstein says is a trick that space-time warps create
and actually it is the timescale
stretching at an increasing rate

That is why an accelerometer in free-fall
doesn't register any acceleration at all
there isn't any, and however far-fetched
that is the answer, the timescale has stretched

I am falling at a constant rate
but time is slowing down
so they see me accelerate
but the idea's clear in my head
they're the ones that are stupid
I'm the one who is dead
I'm not accelerating! I call
time's slowed down by massive matter!
but the fools don't hear me
as I splatter

In 1915, with a Great War raging between nations
Einstein devises the field equations
for General Relativity
the laws that underpin it
relating the curvature of space-time
with the mass, energy and momentum within it

A clock ticks slower
where the warp of matter's lower
a planet gyrates
as space-time fluctuates
rays of light bend
through fields that confound them
as rotating masses drag along
the space-time around them

Done it, and without my notes
since it got dark
albeit that my brains have fried
it's all I can do to park
and get Smilah inside

Hiya Daddio! chimes an ebullient Dandy, as I stumble into the living room. She and Sam have cleaned the entire house. And Sam has fixed things, she tells me excitedly, peeling out details as loud as Big Ben. Which brings Sam from his room, with his thoughts regarding the broken things and alternative strategies and plans he has to fix them.

I can't hear a word either of you are saying, I explain. My brain is still humming along a motorway. They understand. They feed Smilah and let her out in the garden, as I put her lead away and take off my coat. The house looks amazing, I say. Thank you, both of you. You know, when you were growing up, I had no idea that I would end up with two such amazing friends.

This complement makes Sam and Dandy so happy that, despite being 22 and 20 respectively, they start punching each other and running around throwing things. Kids again, putting on a show for dad. When I've loved them enough, I tiptoe away and sit out on the top deck, where I started the day. Clear night, full of stars.

I think I don't want problems
but I probably do want them really
there's the challenge, the fun of working blind
the next thing on my Big Bang list is Quantum Theory
I have to do it, even though my brain will probably unwind
because, as the energy of the singularity slows, as it cools
it transforms microscopically into fundamental particles
that no one can find

And that's where Quantum focuses its mind
but Quantum Theory is to be feared
as physicist Richard Feynman quips
"you won't understand it because
I don't understand it, no one does
because the quantum world is weird"

4 Quantum

"To do is to be" René Descartes

"To be is to do" Immanuel Kant

"do-be-do-be-do" Frank Sinatra

The sun provides it
as light and heat
it's in air and water currents
we obtain it when we eat
it makes the heart beat
but powerful, frightening
in earthquakes, volcanoes
thunder and lightning
Ben Franklin ties a key to a kite string
and flies it in a storm
Galvani finds it jumps between
nerve cells, so muscles perform
it makes our bodies warm
it's what Newton's Laws obey
what Volta's batteries display
it allows Morse to send his code
it's the electric fields of Faraday
it's the motherlode
as the lights come on
along New York's Great White Way
millions flock to visit
but what is it

Is it here or there
or somewhere in between
or is it everywhere
the ghost in the machine
where does it lurk
described as strength, vitality
the capacity to work
as mental or psychic activity
as that which lights the dark
as a person may have zip or zest
or as the vital spark
without mass, it is nothing
but, with frequency and range
it is far from being nothing
simply, energy is change

Resonance, vibration
exchange of information
animation, motion and emotion
process, thought, event, sensation
sight, smell, sound, communication
forces of repulsion and attraction
while matter's doing nothing
energy is action

In a sentence, it's the verb
just as matter is the noun
so when a cup is falling down
the cup is the material thing
the energy its falling
two incompatible ways of viewing
you can't describe a cup in terms of doing
or falling as a being
for us, they're two quite separate
ways of seeing

Things exist in space
events take place in time
point-specific matter forms a grain
while energy comes in waves
events that form a chain
and all of this plays havoc in the brain
do-be-do-be-do
may as well be the refrain

But while our thoughts
our syntax and language
keep them separated
once Einstein has declared
that $E = mc^2$
we've to see how they're related

Scientists had always stated
that atoms were solid and indivisible
but in 1909 Rutherford demonstrated
that the atom has a small dense nucleus
around which electrons circle
making the 'solid' idea instantly risible

Niels Bohr

discovers more

given energy, the electron may absorb it
but will only jump to the next specific orbit

specific orbits suggest basic units and thus

says Einstein, energy is not continuous

these jumping electrons

are fed by little packets, now called 'photons'

Describing light as 'particles' is brave

especially when we see how these photons behave

because our two ways of viewing events

now get us into trouble

in Quantum's two-slit experiments

where we wind up seeing double

Here's the information

1. energy travels in waves as vibration

continuous to human sight

2. 'interference patterns' are spied

when two or more such waves collide

3. a photon is a particle of light

Now, set up a screen with a double slit

shoot a single photon at it

result: alternating dark and light bands

on the surface beyond, interference patterns

but how come a single photon splits

and passes through both slits?

Try again, but this time add a detector at one slit

to see how the photon passes through it

result: the light and dark bands don't appear

waves no longer interfere

but that's just dumb

how can a passive detector affect the outcome?

This madness leads to Heisenberg's 'Uncertainty Principle'

perceived as a wave, you can know a photon's momentum

perceived as a particle, you can know a photon's position

but you can't know both, by definition

it's either wave or particle, energy or mass

...impassé

As if to frustrate us more
not only does the scientist contaminate the experiment by adding a detector
further experiments are done
which show that, just by detecting the qualities of one
of a twin pair of photons, say its charge or spin
you instantly define, that is, you alter
the qualities of its twin
no matter how far away that twin may be
'instantly' is the key
since it defies the speed of light, an impossibility
how can two particles, lightyears apart
communicate instantly?
this is known as 'entanglement' or 'non-locality'
and strikes right at science's cold heart

If everything's moving, how can you know its position
it brings into question the very concept of 'definition'

These weird phenomena turn science into science fiction
a crisis for the method all scientists are serving
to understand the world to the level of prediction
fundamental uncertainty is certainly unnerving

It causes quantum physics to forego proof for probability
to claim that we can only understand statistically
between the two separate points of viewing
the energy/wave and the matter/particle perspective
in so doing
quantum mechanics is very sophisticated and effective

The list of scientists involved in Quantum's development is extraordinary
Planck, Heisenberg, Bohr, de Broglie, Schrödinger, Dirac, Feynman, Pauli
but, by accepting the duality
there is little further insight into reality

Waves form particles and, assuming they do
quantum scientists have conjured up a veritable zoo
of lambdas, hadrons, bosons, pions, taus, neutrinos, leptons, muons
protons are said to be made of three quarks with a little help from gluons
and that's where we're at now
but nothing says how

The doorbell frightens the life out of me. It must be Max, who's 9 and I love him. With a blond mop and twinkling eyes, he's sunshine. His mother, Angela, said he seemed musical when she first called. He's astonishingly musical. He'll pick up any instrument and just start playing it.

I think I was born with music inside me, he said recently. I almost wept. He reminds me of myself at that age, quite uninhibited. I've to preserve that blessed state in him.

Time is short so it's quickly into violin exercises, some wild impros which he loves and a duet. While he goes mad on the djembe, I move things around, ready for piano and singing. The lesson's over in a flash and we're at the front door. I wave them goodbye. Time for some work.

For thousands of years till just a century ago
atoms were believed to be
the basic solid particles of the world we know
though they're tinier than we could ever see
nothing could divide 'em
till we worked out what's inside 'em...
and it came as quite a blow
to find they're tiny spinning forms of energy

Positive protons attract negative electrons
whose numbers in an atom may concur
numbers may vary for the neutral neutrons
and they're heavier
it's horses for courses
an interplay of forces
protons and neutrons form a nucleus of nucleons
around which electrons whir

Hydrogen is lightest with one proton at its core
uranium with 92 is dense
and all the matter in this world is made of one or more
of these 92 dynamic elements
each stunning little circuit
forms the pattern that'll work it
and we may think we know the score
that all of this analysis makes sense

Cos we can load 'em
and explode 'em
we can bat 'em
we can splat 'em
and we may be very clever
but we've never ever ever
seen an atom

Mireille is French, tall and blond like waving wheat. But dyslexic, dyspraxic and inhibited, she does hours of vocal exercises and no creative singing. Left to her own devices, she'll adhere, without deviation, to a straight line. Time and again I watch students subvert their best interests by trying to observe their own performance, like the scientist who, by his very presence, contaminates the experiment. The moment you try to check out how you're doing, you've left the body that's doing it. You're observing an idiot. Any conscious thought will scupper you. There's no 'you' in this. It's all process. Let go! When she does let go, it's frightening. She throws herself around like a demented daddylonglegs, knocking things over. However, let loose, she sings from her heart and when she's done that, she's inordinately happy.

Piano student John Tupper, on the other hand, is a banking consultant, constantly wizzing round Europe and the US, especially since the recession began. Whatever his banking skills, after a year, he can't play piano with both hands without breaking into a sweat. It makes him very angry. He can hardly move for tension. I've to slow things down, enlarge the moment until it's a big protective bubble around us. Then, slowly, he can proceed.

Catherine's next, my last of the day. In her late twenties, she's already fronted a signed band. We started with piano but, after a few weeks last autumn, she dumped her post-grad Music Theatre course at Brighton Uni. So now it's two lessons a week, with lyric-writing, melody structure, dramatic form, orchestration, singing and all the rest. She always comes prepared, tells me what she needs to know next. She's writing a song cycle, working out piano arrangements, learning to play and sing them at the same time. She has a lovely floating voice, a good ear and a clear Irish beauty but what's special, I realise, is that she's sane. As with Max, the lesson's over in a flash and I'm back to work.

In a way, Quantum has led me to a dead end. I've to find a way forward.

Now, I don't want Matter to feel hurt
but, compared to Energy, it is inert
I know that they're transmutable
they're one and the same
but if anything is happening
Energy's to blame

And if matter's made of energy
as scientists propound
it both conjures up the big wide world
and makes that world go round
so if I want to learn how the world behaves
I better find out more about waves

But that's not going to happen now. Denise is calling. She's made a meal and, the moment I'm with her, I know not to interrupt. It isn't just that she's balancing hot pans, her face is dark, her eyes small. She's tense. Work around her. Get cutlery and plates. Clear and wash cooking utensils and pans. Her wine bottle's almost empty, open a new one. Light candles on our little dining table.

As I buzz about, Denise starts telling me about her day. Maurice Jones of the Free Fringe has completely bugged her. He'd offered her the Doolally, a prime site at the Edinburgh Fringe Festival. Having rented accommodation, informed her musicians and started publicising, she needed confirmation and details, like yesterday.

She can't get hold of him. When she does, he says he'll get back to her directly, but he doesn't. Speaking with Kirk McDougall, who runs the Doolally, he says How dare Maurice offer you the Doolally, I'm having that. Then Maurice rings her by mistake, probably intending to call Kirk and ends up offering her the Taj Mahal, an Indian restaurant. Meanwhile her guitarist, Graham, says his wife, Sue, a headmistress, wants to go on holiday in August, when the festival is on. Plus he's been offered a tour with Rolf Harris. Not only that, Den's acting agent, Sarah...

Denise tends never to stop, once she's started. It's always a barrage of information. It's always emotional, either her amazing enthusiasm or her unmitigated despair. Now it's anger. I sympathise, I nod, smile, chew my meat. Often, as I start to get my head around her problem, I make a suggestion which she contradicts. She tells me I don't understand and starts to explain it more clearly. Often I don't understand what it is I don't understand. But sometimes she then says the very thing I'd suggested. And it occurs to me that she can't hear me. She's not rejecting the idea, she simply can't process it. Better to nod and smile.

Trouble is, how to get out of the situation, since she's obviously winding herself up. I rise. I'm getting a coke. Would you like one? Have you finished eating? Shall I take your plate?

She doesn't want me to take her plate. She's cross. We were having a lovely meal. I've misjudged. Grab a coke and sit back down.

Denise's acting agent, Sarah, is never in the office nowadays and her assistants, who have very little experience, come and go. Only yesterday, Denise called up and...

I understand how upsetting and real this is, but I can't help. I've offered sympathy for an hour now, ever since I came in, head ringing with students and quantum and I need a break. If I turn on the TV, there'll be a stink and I don't want any unhappiness. Soothing words. Try soothing words.

Well, I say, production companies at the Edinburgh Fringe leave things to the last moment, it's to their advantage. So do musicians. Your acting agent has a lot of clients. All very frustrating for you. But, somehow, during the course of a day, the dust gets kicked up and it's only the next morning that it becomes clear what's to be done.

I know what to do! It's just that nobody will let me get on with it. If I could just get a reply from the Assembly Rooms, but Hilda...

So that failed. Sit and nod till I come up with a new strategy. Particles are heavy and make up real things. Waves come in wave-form and are weightless. I can't think. A bottle and a half in, Denise's passion will not abate. The drink is feeding the fury and I'm going to wash the dishes.

What are you doing? she calls. But I'm in the kitchen chucking cutlery and crockery into the sink. Following me in, Denise demands to know why I'm being so unfriendly.

Well, I can't help you, so you say, and I've been sympathizing for an hour and a half now. And there's nothing more I can do, except the washing up.

It's alright for you with your lofty thoughts, she says. I have to face the real world, while you hide away in your ivory tower going moldy!

With this parting shot, she's out the room and up the stairs to Bedfordshire. And I'm doing the dishes in some half-state, not knowing if I'm a wave or a particle.

5 Waves

*“The sun had not yet risen.
The sea was indistinguishable from the sky,
except that the sea was slightly creased,
as if a cloth had wrinkles in it.
Gradually as the sky whitened
a dark line lay on the horizon, dividing the sea from the sky
and the grey cloth became barred with thick strokes moving,
one after another, beneath the surface, following each other,
pursuing each other, perpetually.”
Virginia Woolf, opening to ‘The Waves’*

By the time I got here, the sea was clearly distinguishable from the sky, the wind stronger, ocean louder, stones less comfortable than I’d imagined. But uncomfortable is what I’m looking for, I tell myself.

I had a lovely weekend up north with Denise, who’s out of rehearsals and starting performances this week. Arriving back, late Monday, it was straight into giving lessons. Although I’ve managed, in the three days since, to research and assemble information, I’ve no idea what any of it means.

Sometimes, especially after a gap, I seem to build up an almost impenetrable resistance to the work I so want to do. Anyway, last night, I chucked myself into bed the moment lessons were through and set the alarm for five. So now I’m teeth-chattering on the beach and any thought seems out of reach

Clouds rolling overhead
stiff breeze down here
seagulls soar and perch
the beach deserted
I’m supposed to assimilate research
till each idea
comes up crystal clear, instead
my eyes watch waves rise
crest, break, suck back
again and again
they mesmerise
apparently if you track
the actual water molecules
you find they go round in little circles
and it’s the ‘wavefront’ that is passing through the sea
water’s just the medium
the wave-front is the energy

If I translate that to me
my body's the medium of my energy

Energy comes in waveform
it vibrates
it forms a vast spectrum
which radiates
passing like the wave of a wand
from radio, through microwave and beyond
the infrared, the rainbow of light we see
with ever shorter wavelength and higher frequency
the harmful x and downright lethal gamma ray
caused by radioactive decay
but they all obey
a single creed
and scientists have found it
they all travel at the same 'lightspeed'
and each wave yields
vibrating fields
around it

Vibrating fields, that's it
I live in an electromagnetic state
a vibrating field of vibrating fields
within fields that vibrate
feels great

The roar of the waves is balanced by the roar of traffic behind me. People off to work. The fuel they burn, the air I breathe, nothing disappears. One vast recycling plant.

My eyes are attracted to anything that moves, cars, seagulls, the man out with his scampering doggie or a single pool of glittering light on the rolling sea. If I'm not careful, I'll just sit here vacantly watching the changing scene. A minibus parks and wheelchairs roll down a ramp. A trail of invalids slowly snakes past a young mum with toddler and babe in arms.

Attracted to movement I may be, but were I to actually experience everything moving – air currents, water currents, each photon of light, each atom whirring, planet spinning, even the ground beneath me – I think I'd try to clutch on to something, anything...

In a way it's easier to understand
that matter is moved by an unseen hand
than it is to see
that matter itself is made of energy
yet even the Laws of Thermodynamics agree

In a closed system, they maintain
mass/energy is conserved
whatever transformations are observed
from mass to energy, wave to grain
the total tally will remain
the same with neither loss nor gain

The second law states that everything turns to shit
increased entropy sees to it
while quantity is retained within the domain
quality slowly goes down the drain
so in a closed system, mass-energy
will move inevitably
towards a state of inert uniformity

This second law makes the observation
that if our universe has space-time boundaries
such as a moment of creation
if one day it began
then one day it will have ended
when all the youthful vigour it once had
has been expended
sad

Luckily this won't come true
in the next year or two
in fact scientists gauge
that the universe is but a bright young thing
only 3 times Earth's own age
(which is puzzling)

But that's all unfounded
if the cosmos is unbounded
if creation is ongoing
there's no knowing

People chattering at the beach cafe, swarming around the pub reveal that it's lunchtime already. They're fuelling up, turning food and drink back into useable energy, temporarily avoiding entropy. Out of harness, they're buzzing with vitality, letting off steam. On one scale of reality, photons in a stream. And me in my dream.

Endless process, it never stops, as my students never stop telling me. They're moving houses, changing courses. Making ends meet, rushed off their feet, impelled by electromagnetic forces. Until those forces are spent.

A life is an event
a spinning world loves routine
but where it's going is not the same as where it's been
when my eyes recognise something they've seen
they are, in effect, freeze-framing it
whatever information I may glean
about its shape, its constituents, even naming it
says little, if anything, about its journey and what that might mean
in fact, defining it objectively
as an object, is what's strange
makes it seem like a static thing
when it's actually in a state of change
or even more bewildering
it is a state of change

Since the world can't be seen from outside
every view is subjective
there's no superior perspective
no place from which to see
anything other than waves
"pursuing each other perpetually"

If I want to see how the world is
say, from the ancient Christian view
with Earth at the centre and God in his heaven
a single picture will do

If I want to know how the world works
Newtonian mechanics will describe the scene
where planets revolve around a sun
where the cosmos is a repeating machine

But what about events that don't repeat
what about change?
what's new?
for all the puzzles mechanics solves
if I want to perceive how the world evolves
I must let go of the loop and the freeze-frame view
let go of objects in space
instead, watch the journeys they pursue
over time, the courses they trace
and that's what the Big Bang Theory is trying to do

For all its complexity
a simple précis would be
that electromagnetic energy
expanding, cools and slows
as out it flows
while, at specific vibrations
changes occur
stages in the development of matter
where forces diversify and recombine
as protons attract electrons
as atoms entwine
as clumps get fatter
as matter attracts matter
until at last
structures once tiny
become vast

The burnt-out west pier seems to rise until, squinting, I see it's a flock of starlings, lifting into the air. Tributary tribes swoop in over the Downs. Waves of starlings, swarming and switching, drifting and shape-shifting up there. Cars are nose to tail again. The day is closing in. People are going home, children to collect, food to prepare. A jolly man passes with two youngsters in tow. Is it all automatic, the children he raises, the money he earns? Evolution says there's progress, he lives and he learns. When I think about this energy bursting from nowhere and making the universe, 2 questions leap out to focus my concerns.

The first is: How can it come from nowhere?

The second: How can it make all the patterns?

Investigating quantum
I came upon a strange phenomenon
concerning vacuums

Imagine a void
where scientific instruments have been employed
to suck out grains and waves of every sort
until its mass-energy is nought
peer into the void
with an electron-microscope
and you will see
tiny twinkles of energy
they pop out of nowhere
into empty space
for a split-second remain frozen there
and vanish without trace

Little missiles of energy
popping in and out of existence
from and to nowhere
incessantly
however many times
the experiment's repeated
empty's never empty

Scientists in their wisdom
explain this as a lending system
where energy is borrowed
from the future
the loaned energy comes into view
and is repaid a nano-second later
as the loan falls due

Are they sure
the real physical world can draw
from its own future store
are we in the future's thrall
is it a prescient intuition
and the future's winking back at us
through our vacuous
crystal ball
perhaps the explanation
is just a calculation
to balance the books
and that's all

Or, perhaps 'c' is not the fastest speed
just the fastest we can read
and there's a higher realm
with faster wavelengths at the helm
and nothing to prevent 'em
sometimes losing their momentum
as fallen angels who appear
in our slower world down here
just long enough
to regain their puff
and make their presence known
before zooming back home to the God zone

Whatever the mathematical or spiritual speculation
a void bubbling with latent energy is the actual observation
and the simplest explanation of this curious manifestation
is that the cosmos is not some big empty place
that gets filled with up with stuff in due course
as if by some magic trick
simply, even empty space
is a property of this force
and energy itself is the fundamental fabric

Whatever the truth, we've an inkling
that there is no such thing as nothing
even a void is twinkling

Head full of waves and processes. Evening's coming on. Hoards of happy Friday folk converging on my beach. I've wandered east to escape the throng, beneath the pier, replete with blaring pop, a jangling carousel and the ear-splitting song of a thousand roosting starlings. Further along, past the students smoking dope and swigging beer, the parties and beach barbecues springing up on the pebble hills. Keeping to the shoreline, I come to a dead end here. With the marina's sea wall ahead, unreachable stars above, barbecues flickering like fireflies, perched on an old stone groyne, to at least sum up this physics stuff...

Energy is its own medium
that, certainly is true
present, even in a vacuum
at its fastest through a vacuum too
it holds time and space
in its embrace
yet everywhere
spinning forms and structures whizz
from orbiting electrons
to spiralling galaxies
circles within circles
shapes and symmetries
are we saying that the electromagnetic force
steers its own course
how can it weave
all the forms and patterns we perceive

I have to leave, I'm cold. The fireflies have stopped signalling. A bank of cloud has closed like a curtain on the stars. Only the faraway pier lights the banks of rolling foam, spectral white horses galloping nowhere and I'm washed up here, all alone. Whatever's done is done, no more tonight. Time to go home.

6 Harmony

It is Lalla's birthday. And I am very excited. It means I'll see my other family.

When I entered the lower 6th, aged 16, a new boy joined. Through him I met his parents, his sister whom I later married, his younger brother and the youngest, Lalla. She was about a year old then and christened Atalanta Rose. Born with Downs Syndrome, she couldn't say her name and it got abbreviated to Lalla. As an adult, she decided to be called Elisabeth. Is she 45 today? There is nobody in the world I love more.

But I love them all, unconditionally. So, for me, this is a party with an amazing cast. Its matriarch is Pam. She is a playwright of renown but, more to the point, of wonderful perception and understanding. Born near Christchurch, Dorset, in the early 1920s, Pam describes herself as a 'gyppo', no status, no shoes. But the war made her a Wren and, afterwards, Manchester University gave her a psychology degree. There she met Keith. He looked like someone I knew who died in the war, she's told me, ruefully. They're chalk and cheese.

Keith's family had, for generations, run a profitable business making waxwork figures. So, where Pam's background is poor, Keith's is wealthy. And where Pam is round with big clever eyes, Keith is tall and looks like a surprised Scandinavian god. But neither had mothers who loved them. Neither gives a hoot for convention.

Jonny, my schoolfriend, was their firstborn. Sent away to private schools from which he was expelled, I met him when he joined my state school. He was soon expelled from that, though not before I was hooked. Faced with an idea, most people I've met will take up a point of view, an opinion. A fixed position from which to argue or debate. Jonny and Pam don't do that, they engage, add, leap streets ahead. Coming from a world that argues, they allowed me to think. I won't see Jonny tonight, due to a tragedy. As a screenwriter in Hollywood, he contracted hepatitis C. The last time I saw him, he dwelt in a darkened room. He is also not speaking to his family.

There's a charismatic tension between the members of this family. Each orbits a different star. Jonny and brother David haven't spoken in decades. Sara's Keith's girl, Jonny's Pam's boy. All three children have ongoing issues with their parents, Lalla being the exception. Sarah used to say it was alright for Jonny, he got Keith's looks and Pam's brains, whereas she got Pam's looks and Keith's brains. Of course the insight belies the insight.

Things have changed over the 43 years I've known them. Although prone to depression (recently confiding that she's still waiting for her life to start), Sara has two grown children, friends of my kids, and lives in Ireland with partner Vinny. David, 7 when I met him and already an expert on dinosaurs, now researches the genetics of ageing. Married with two nippers, they're presently perching next door to Pam and Keith while their house is done up. David has, in some way, filled the vacuum left by Jonny.

Pam is also not going to the party. She doesn't like parties and walking's too much for her now. But I'll see her in less than an hour, depending on traffic. Sam's not coming, zonked after his first week as a yacht valet down the Marina. Dandy will make her own way over, from her college digs. Denise will come down by train from Derby. Also Keith's invited Mum and Dad, so I'll pick them up later on. It's early afternoon and I've set off early so I can spend time with Pam.

There are six old people that Denise and I love. My folks, hers, Pam and Keith. When Sara and I separated, Pam remained my close friend. She's my mentor really. Denise's too. Pam got her first leading role and describes Denise as 'this genius'. Keith and Denise go sailing. All six oldies are approaching 90 (Eric's 91). So this is precious.

Pam is sitting on her sofa watching TV, surrounded by magazines, books, pens, paper, old cups of tea and her two yappy dogs, who go mad when they see Smilah. Fancy a cup of tea Pam? What a good idea, she says. And we're talking, this and that. In the last year or two she's lost her short-term memory, but she's still brilliant in the moment. When she asks what I'm writing, I tell her and she advises me, about subsuming research and the preconscious nature of writing. I still get ideas, she says, but when I get up, I just watch TV.

David's nippers run in from next door. I've never seen Pam so happy. Talent can be a burden, the next play, the next production. All her life till now. Watching her with her grandchildren, my heart pitterpats, until Keith bursts through and wraps me in a powerful bear hug.

Elisabeth (Lalla) is off with Sara and the kids, buying things! (The implication is always that he's paying). Oh and he's had a message from Denise. She's running late. Also, he's got to clear the swimming pool roof. Downpipe's blocked! Is he seriously going to climb onto that high roof? He's 89! I look around for someone else who might do it.

As I scramble up the ladder and haul myself onto the slippery roof, Keith follows me up. I thought I'd explained that I was doing this. He hovers between ladder and roof, held at some impossible angle for an age, as if by magic, and I daren't help. Once up, he's boss again. Grab that. Do this. Move that. Then he starts to sing some old country song and I join in. Hey good lookin', what you got cookin'...

By the time we're done, I'm late for my parents and somewhat dirtier than when I arrived. Denise won't be here for an hour or more. I may have to come back to pick her up. But Dandy is here, playing with David's kids, and says don't worry Dad. If Margaret and Eric don't fancy popping by to see Pam, I'm sure there'll be a car going.

But what about you? I splutter. I haven't thought this through. We can't fit five people and a dog in the car. It's not a problem Dad, she says. You just go and pick up Margaret and Eric and everything will be alright. Just don't worry.

Pam loves this. As I bend to say goodbye, she whispers, she's amazing Paul. I tend to kiss Pam briefly on the cheek, as she shies away from that sort of thing. Now, however, she plants a big long kiss, straight on my lips and beams up at me, as I rise.

I hadn't even thought of asking Mum and Dad if they'd like to pop in and see Pam. To my surprise they both immediately say yes. I know Pam's always liked Eric. Looks like Yves Montand, she once said. And he has a soft spot for her. They share qualities. Margaret is far more comfortable with Keith. But nothing prepares me for what happens when we get there. Eric sits holding Pam's hand and they talk. Margaret leans forward and joins in. And they talk. Even when Sara and her mob troup in, the little old triumvirate chat undisturbed, their faces and their eyes full of warmth.

Sara looks wonderful. As we embrace, thirty years melts away. Keith is beaming down at us. Like old times, he says, as David and his crew swarm through from the garden. Denise arrives. Everyone greeting everyone.

Elisabeth's here! calls Sara to alert us. You look amazing, gushes Denise. And she does. Taller and broader than me and with a far finer bust, decked in a swirling cream creation, sparkling jewels and a tiara, she'd make her royal namesake, the Queen of England, look small and dowdy.

As we applaud, she does a twirl and touches her shining crown. Then she notices me and we instantly merge. When she was a tiny babe, I'd carry her on my shoulders, cradle her in my arms. Now she's cradling me. No one gives unconditional love like Lalla.

Apparently we're supposed to go. But who's going in which car? Are there enough cars? I attract Denise, but she points to where Pam, Eric and Margaret form a cosy coven. Denise's jaw drops, as if to say that's special, isn't it. I nod. Dandy tells me she's going with David's lot. Denise, Sara and co. are going with Keith. Wish us luck! says Sara, on her way out. Keith's driving is legendary.

When they realise the others have gone, Mum and Dad say their goodbyes. Dad leans down and kisses Pam. I'm second in line. Pam whispers maliciously, have fun. As I follow my folks out, she's already got the TV remote poised.

Margaret sits beside me, fascinated by the sat nav images, comparing them with the road ahead, asking me questions about how it works and finally telling me what to do. Turn left in 250 metres. Left. Is it this one? I don't think it's this one. Yes it is. Turn! Never a dull moment. We park by the stage door of the massive Drury Lane theatre. Margaret is impressed. She thinks it's going to be posh. It isn't going to be posh, it's going to be crazy. The restaurant is covered in vines and far too many baskets of flowers. Inside there's a great central aisle, with tables all joined up along it, which is where our lot are. The surround is on two levels so, when the opera singers start to sing, people hang over the balconies. Lalla's in pride of place. I sit next to her, opposite Sara. Denise and Keith are escorting Mum and Dad to slightly quieter seats up the back.

Lots of others have joined the party, family friends I only see at these doos. A madame who runs an S & M dungeon. An architect who only wears red. I have a long chat with Keith's secret long-term partner, Nina. He's planning to go sailing with her 'when Pam's gone'. (It hurt me when he said it but everyone's gotta have a dream.) I'm surprised to hear that Keith is putting up Nina's friend, a nurse, in David and Judith's garden room.

Outside, while I'm having a cig, Judith is obviously upset about it. Keith says it's so she can look after Pam. But the garden room was built for them. There are four of them in three rooms and the nurse can see right in. Judith wants to move into their new place in Notting Hill but it's not ready and she thinks it's good for Pam to have her grandchildren around.

Back inside, I check on my parents. Eric is deep in conversation with David. He wants to know what progress is being made into our understanding of ageing and what the potential for longevity may be. Dad's already announced that he'll be disappointed if he doesn't reach 100. David informs him that there's no reason people can't live to 140 or more. I can see Dad resetting his sights.

Keith is regaling Mum with seafaring yarns. They're both deaf, so they speak LOUDLY and CLEARLY. Keith crossed the Atlantic solo in his seventies. Once in a storm, he lost his thumb, but found it and had it sewn back on. He shows her. Margaret is full of polite admiration but less keen on her food.

For twenty minutes we are entertained by opera singers who walk heraldically around, singing to everyone. Whatever anyone thinks of the actual singing, every face grins and, at the end of

each aria, everyone cheers. My parents love it. By the time the string quartet strike up, I'm back with Sara and Lalla, plunging a spoon into blackcurrant and mango cheesecake. The moment the quartet leap into a gypsy czardas, Lalla leaps up and does her dance for the whole restaurant. She kicks up her heels and lifts up her dresses and shakes her bum and her tits. The waiters grin indulgently and I notice my mother's face, something between ecstasy and panic. Sara and I are just roaring. And we're all clapping in rhythm.

The cake with 45 candles is magnificent and the whole restaurant sings Happy Birthday to Elisabeth. My parents want me to order them a cab. It's 11 o'clock. They're tired. They thank Keith and say goodbye to everyone. I lead them out and see them off.

Sara's outside when I turn from waving. She has news. What? I ask. I'm cured, she says. Of what? I ask. My depressions. How? It's silly. It's an allergy. To lactose, would you believe. Stopped drinking milk. Haven't felt low since. That's amazing. It is amazing, I feel like I've just been born. Oh Sara. I don't know what to say. I well up. But that's the good news, she says. There's bad? Dad is cutting Jonny out. You know he's getting rid of everything, passing it on to avoid death duties? Well, he's bought me a house, and David. But not Jonny. She and David have agreed that Jonny and Lalla must be equally served. I'm glad to hear it.

Denise has joined us. She's staying over at Pam's tonight since she's back up to Derby tomorrow. We spend some time, giving Smilah a walk, chatting things through, what's happening when. It's always hard to say goodbye, especially when we haven't really said hello.

By now everyone's getting ready to go. Hugs and kisses on the pavement outside, till I wrench myself clear and set off down the motorway. Normally, leaving company, I'm eager to get back to work. But this evening haunts me and it's only remembering Pam saying 'subsume your research' that gets me on track.

In the 18th century

Ernst Chladni

has a violin bow in his hand

which he's drawing down

one edge of a metal plate

making it vibrate

its surface is lightly strewn with grains of sand

and, as if they're in a trance

as the plate reaches resonance

these grains begin to dance

until patterns appear, a great array

of circles, triangles, parallel lines

symmetrical forms on exquisite display

as a single standing wave defines

so all the little grains obey

that's what energy does

it designs

In last week's lesson, little Max drew his violin bow too lightly across the A string and out flew a piercingly pure high note, not the note he intended at all. He grinned, both thrilled and confused. So I showed him how to get harmonics.

These hidden notes are not just any notes, I said. They form octaves, perfect 5^{ths} or 4^{ths}. I've been told that any one note contains all the others in harmonic series. How? he asked, excited. I don't know, I admitted.

I've since googled 'harmonics' and researcher Steve Lehar popped up to explain.

Harmonic resonance is an extraordinarily diverse
and varied phenomenon which occurs
in countless forms throughout the universe
with laser resonance in microwaves and light
electromagnetic oscillations
acoustical vibrations
and orbital resonance formed by massive gravitations
producing a web of correlations
a vast dynamic grid
of sympathetic waves
so harmonics, which I loved, learning fiddle as a kid
those little circles above the staves
are somehow central to the ways in which the universe behaves

They span every temporal and spacial scale
from elemental particles who sail
in a microcosmic sea
to the orbit of a planet, star or galaxy
yet all oscillate at some prime frequency
some fundamental pitch
and at specific multiples, which
subdivide space into a rich tapestry
of harmonic intervals
that balance each other perfectly
and these mathematically sublime
patterns of the prime
have properties of periodicity and symmetry
across every possible dimension
of space and time

However, at any other frequency
the interference results in surges
disturbances that are irregular and non-repeating
that is, dissonance gets factored out, is fleeting
while pattern, form and structure emerges

Harmonics are thus the rhythm and rhyme
defining space and time

There's a four-thousand-eight-hundred-kilometre-wide gap
in the rings of Saturn
known as the Cassini Division
it is a moon, Mimas
which creates this pattern
though the moon is nowhere near it
but orbiting once for Cassini's twice
produces the frequency to clear it

So perhaps
the aesthetics of electromagnetics
doesn't just make the things but the gaps
and maybe resonance is the reality
behind 'entanglement' and 'non-locality'
either way, it's everywhere we look
weaving the pattern and structure at every scale
writing the book

Let's get this straight
within the realm of energy
harmonics are innate
and as sure as day follows night
time, space, matter, void
are all of them tricks of the light

Well energy's king of the jungle then
the jungle too and the whole damn zoo
the medium, the message
the yin and the yang
the spider and its web
the whole shebang

Matter can also be expressed in waveform
de Broglie won the Nobel Prize
for describing the wavelength of matter
since it is energy in disguise
but does this mean the whole universe
might be described in terms of waves
(rather than particles building)
as the paths that energy paves

If energy conjures up space-time
how is it possible to say
that the universe began 13.7 billion years ago
on a Saturday
it surely determines its own boundaries
in fact, if it's all there is
the whole idea that it is bounded
is ungrounded

The question would revolve
around how energy turns a trick
that's the riddle to solve
is it fixed and automatic
or may energy evolve

If material evolution
is a process we discern
then, through similar feedback systems
energy, equally, might learn

But can something that never began
and will never cease to be
evolve continuously

Also, is there a connection between our notion of intelligence
and the nature of pattern and coherence...

Never mind my theories
everything, it would appear, is
defined by the harmonic series

Sitting on my first-floor balcony, it's so easy to forget everything I have to do and nod off, gazing at the sea. I've never known a spring so bright and warm, day after day, almost too good to be true. One of my students, Mike, said last night, if this is global warming, bring it on.

And Denise is fine. The play, for the Forgiveness Trust, is tough. It's about Islamic communities living in this Christian country. All the actors speak lines actually said by people interviewed on the subject. Some of the things they say are very challenging. But, after the exhausting rehearsal process, she's enjoying herself. It's about something real and the cast are lovely.

Dandy is loving her costume course at Wimbledon, back there now after Easter, for the last term of her first year. Sam loves his new job, fixing yachts in the sunshine down at the Marina. He almost got sunburn, had to cover up his arms and legs. And I'm off the hook, but not at a loss. Time to read a book about the cosmos.

7 Cosmos

Stella has been diagnosed with cancer. We thought it was just dementia, but she's been losing weight and hardly eating, so, despite her frailty, Den's father and sister, Don and Carol, arranged for tests. Now we know. And Stella knows. She asked, is there anything we can do? Told there was nothing, she said, best to forget it then.

Though put on appetite enhancers and supplied with energy drinks, no one was sure if she'd be here today. Don's been on tenderhooks, arranging, rearranging, ready to cancel... For today marks Don and Stella's sixtieth wedding anniversary. He's bought her a diamond ring and a zimmerframe.

It is a beautiful day. Stella zimmerframes herself out to the car, which transports her to the venue, just along their road. My brother Richard, Karen and their kids arrive as we park. The pub is already filling up with relatives and friends. Her godson, Philippe, a headmaster and his wife, from Switzerland. Jonathan Band, former First Lord of the Admiralty, and his wife, Sarah.

Stella sits with two of her friends from her days at Lloyds bank, one has come from up north, another from a local home, with her minder. Thirty or forty people mingle until it's time to file through into the function room. It is immediately obvious how hard people have worked. Stella and Don are seated in front of a large photo of themselves, on their wedding day sixty years ago. There are other photos to look at. The tables have been set with sweeties and flowers. There are flowers everywhere.

I don't notice the meal. Don gives a most loving speech to his wife, which it is almost impossible for him to deliver. He stops when tears get the better of him. And we stop too, and wait. And he continues. Godson, Philippe and son-in-law, Duncan each tell us, in different ways, how much Don and Stella are loved, and why. They've always had open house and open hearts, are at the centre of a lot of people's lives. I realise it is true. Like everyone else, I try to keep the tears to a minimum, because, although we celebrate this anniversary, something unspoken lurks beneath, which makes it all unbearable. Stella herself is alert and enjoys every moment.

Of course, everything has changed. It's terminal. Denise has finished her run in Derby and just turned down another job. She sleeps in the car on our way back to Brighton and goes straight to bed. It's tough, but she's alright. Let her sleep.

I sit out on the deck and gaze at the stars. It's a clear warm night.

There is no void
no firmament
no container
no outside
only the event
a 'singularity', a propensity
a super-photon of enormous heat and density
experiencing massive inflation
roaring outward
into its own creation

A shockwave
the fundamental frequency
the prime
exponentially expanding
commanding ever greater space
taking ever more time

As the fireball grows
as it cools and slows
irregularities occur
harmonically-splitting frequencies
as different heats and speeds confer
specific properties
patterns, sequences
which polarise
as creation roils
as electromagnetic coils
crystalise
into their mirror images

As plus and minus forces pit
themselves against their opposite
they self-define
annihilate, assimilate
diversify and recombine

Forging compound forms
within the burgeoning miasma
where currents whip up storms
of positive and negative ions
into vortices of plasma

Spiralling whirlpools that draw
power from afar
energy traps
demanding more
until they are
spinning ever faster
as they collapse
to form a core
the seed of a star

Spin

protons and electrons forced out, begin
to form a ring around the equator
and spin
as plasma falling in
feeds the core
increases the spin
as polar jets remove excess pressure from within
regulating the power the process uses
and everything turns
until hydrogen fuses
causing the core to ignite
it burns
and the star bursts into light

Once the newborn star
has found its bright beginning
the disk around it
cools into a ring of planets spinning

As the core grows increasingly hot and dense
it fuses ever heavier elements
and more energy is used
hydrogen is displaced outward
as helium is fused
which makes way for carbon
then oxygen, silicon
as each in turn is forged within
increasing energy is spent
and the star is like an onion
skin upon skin, element upon element

Lightest at the surface
heaviest at its heart
until iron is forged, when increasing heat
begins to tear the star apart
its core becomes unstable
requiring more energy than is available
and, caught in a series of energy vacuum traps
the star undergoes
a sudden catastrophic
collapse

Between the red star's implosion
and its supernova's explosion
there is a momentary state
when rebounding nuclei
bombarded by neutrons
fuse in the heat to create
the heavier atomic spectrum
up to and beyond uranium

So all the chemical elements
that make everything from moons to elephants
all the matter on display
is made in stars and supernovae

This violent early universe
now steps on the gas
evolving bigger and better stars
from stars of smaller mass

But stars are not isolated objects in space
not strewn or scattered randomly about the place

At the heart of each galaxy
lies its nucleus, its superstar
its Active Galactic Nucleus
its shield a quasar
the most luminous sight
in the galaxy, so bright
matter moves at almost the speed of light

And within this quasar
a super-massive black hole
with a disk of gas and dust
around its equator
a jet shooting out from each pole
(just like a young star but billions of times greater)

This super-massive black hole
is surrounded by an invisible cape
which marks the point of no return
you're here and gone
nothing, not even light can escape
the event horizon

Its 'active galactic nucleus'
is a galaxy's heart and soul
turning like a wheel around it
bathed in its energy
under its control
each part harmonically structured
dynamically balanced within the whole

But galaxies are not isolated systems in space
not strewn or scattered randomly about the place

There is a Great Cosmic Web of filaments
where rivers of plasma flow
and where these filaments entwine
dense super-clusters of galaxies grow
like grapes on a vine

These plasma streams carry their contents
of negative and positive ions
the building blocks of elements
right to the heart of each galaxy
where light-speed energy
whips them into spinning vortices
stellar nurseries

So stars and galaxies are stream-fed
by umbilical cords, connected
to all other stars and galaxies in sight
themselves transmitting streams of light
a nervous system
of electromagnetism
a cosmic web that delivers
a blood supply of plasma rivers
flowing through
that generates, regenerates
creates and procreates
like living tissue

And this intergalactic medium
extends throughout space-time
extends in all directions and dimensions
defies our best intentions

Though we throw the book at it
we have no way to look at it
no matter how we spin it
we cannot visualise
its shape or size
for all we know
it's infinite

So here we have a tumbling rhapsody
where energy provides its own means
streams of plasma
blast furnaces
factories churning out systems of systems
fuel-injected mass-made machines

A whirlpool ocean
of forward motion
forever pursuing
whose being is doing
weaving stars and galaxies
as if it had planned them
where all is flux
but never random

Symmetry abounds
in all that surrounds
and in every part of it
charges of electron and proton
exactly equal and opposite
while each comet, planet
star and galaxy yields
polar jets, equatorial disks
in and out-flowing auroras
and dipole magnetic fields

Webs of communication
and innovation
suggesting presence of mind
or at least the appearance
of total coherence
and energy does all this on its own
working blind

The conflagration of forces in the cosmos
at any given moment
might be expected to produce chaos
yet, by intention or invention
what we see
is increasing complexity
how come flux produces this dynamic and evolving symmetry

Seems like hard work to me. I watch it in my family. It may seem as if they synchronise automatically, but I know how hard they try.

Someone will die, it's very real
and no one knows how that someone may feel
nor how her husband may feel
how much more intense
it must be
and therein lies the suspense
between the family and friends
held by tremendous feeling
since inside we are reeling
the occasion of such import
everyone does what they ought
to weave one perfect final anniversary
we move in symmetry

We dance this electromagnetic dance
since we too are energy events
yet even with all this dynamic coherence displayed
no one knows how a particle is made

Also, if space is a property that energy will confer
how can a singularity occur
perhaps it's the unknowing
that keeps the whole caboodle going

Perhaps we have the concept wrong
the wrong point of view
it should be crystal clear
perhaps we just can't see the wood for the trees
something must ring true
someone must have an idea

please

8 The Hollow Man

Denise is happy. She's been offered a guest role in TV's Midsomer Murders, to start filming in about a month. This is particularly good, as she doesn't want to take on a theatre production at the moment, due to her Mum's condition. It'll only take a few weeks to shoot and she'll be nearby.

Also, when we wake, it's sunny. I don't know what's wrong with this Spring, the sun just shines. Light streams through the open glass doors as we lie in bed chatting, with the odd kiss thrown in. There's always been this warmth between us, held us close. The lyric I wrote when I met Denise, began

When I'm with you I'm so happy
sudden smiles too much to take
when I'm with you I'm so happy
everything for its own sake
in praise of love...

Dandy used to sing and play it, in an arrangement by my brother Richard, in those years we taught music to each other's kids. So we know we're a happy family, despite all the stresses and strains. Actually, it's the question of identity which tends to cause the problems. Children refusing to take their parents' advice, siblings differentiating from each other.

Sam, aged about 15, confided that When I don't do what you say, it's not because I don't want to be influenced by you, but because I'm so easily influenced that I lose sight of what I want. There are ways in which families neutralise and polarise each other (as do nations, humanity and probably nature). So that, even within our interdependence, we're fighting for our independence.

This independence is a sort of lie. As soon as I realised that even my favourite, most private occupation, writing, was at least intended to serve others – a song, a show, whatever – it became clear that every activity is a form of service. As Bob Dylan sings, 'you gotta serve somebody'. I serve myself enough to be able to serve others. So giving and taking defines us and independence is out of the question.

As for identity, I'm not sure it exists. There used to be this psychology idea that you could peer beneath the surface to the core. We have characteristics but I'm not certain that, deep within our centres, we have an identity. The nearest I get to something like identity, is when I'm up to speed, actually doing stuff, connected. In fact I've often thought of myself as a hollow man. When I looked at others, they seemed well defined. When I looked into my own soul, I saw nothing.

Which is exactly how Paul Marmet, describes the centre of an electron.

Having asked how you might get
grains of matter from streams of light
Canadian physicist Paul Marmet
may provide an insight

He says the centre of a moving electron current
is like a hollow tube and that, furthermore
“the entire mass of the electron ‘at rest’
is a distribution of an electromagnetic field
surrounding a hollow core”

While the field extends to infinity
most of the energy’s in the vicinity
of the inner space the fields create
and it’s the energy employed
squeezing at the void
which gives the electron its nominal weight

So I presume
he’s suggesting mass is energy
compressed around a vacuum

My energy is presently compressed around a blissful vacuum, sitting in the garden having breakfast with Denise. It’s Saturday and she suggests taking it easy, spending it together, doing nothing.

Getting work is, for Denise, like switching on a light. She jumps to a new energy level and right now she is radiant, wandering around the little garden, deadheading roses, pruning, weeding. Our Lady of the Flowers. I’m just basking in the sun.

With far greater mass
than the electron has
a proton will wield
a far greater field
yet, at their extremities
both have identical field densities
Marmet says that the vacuum
in a proton, has far less room
there’s a whole lot more
energy pressing at the core
and this compression will translate
into its far greater weight

And hence the far greater sense of identity which Denise exudes as we walk Smilah on the Downs. While she greets and passes the time of day with fellow dog walkers, I’m looking at us all as ‘concentrations of energy’, watching how quickly people adapt to each other, as I adapt when Denise’s phone rings and I’m immediately back in Paul Marmet’s ideas. Perhaps we’re only who we are, in relation to each other.

Marmet is stating
that electrons and protons “are not point particles”
from which energy is emanating
but “hollow clouds of electric fields” accumulating
‘mass’, a concentration of forces that cling
to the void at the heart of every ‘thing’

If I apply that at a human level, no wonder we try to define who we are. I’ve no problem with being a hollow cloud of electric fields. It’s just that, sometimes, like Sam, my fields get defined by others. Hearing Denise on her mobile, telling friends and family about her Midsomer Murders part, I’m thinking, what will I do when she’s away. Write, teach, walk dog, take some space...

Back from the walk, Den’ firing off a few emails before we go to eat. Pam’s always remarking about Den’s energy. Like a spinning top, she just can’t stop. I choose a different pace. Marmet begins his next sequence by describing a stone falling into a pool of water.

Observing how energy behaves
anyone watching a stone fall into water, sees
outflowing rings of waves
these are ‘toroidal vortices’
and they convey
the energy away

A similar phenomenon happens in air
“which also has a low viscosity” he says and “where
the kinetic energy of the wind
is transformed into vortices” and grows
into whirlwinds, twisters and tornadoes
well before the energy cycle is complete
when it’s finally displaced back into heat

However, if we choose a fluid
whose viscosity is zero
that is, it has no resistance and so
will flow till kingdom come
such as low-temperature superfluid helium
all the kinetic energy and momentum
from the falling mass
will remain in vortex-form forever
will never deplete
but forever repeat
since the motion of a superfluid
is never transformed into heat

And in electrons and protons
that's exactly what's occurring
since their energy will not yield
they just keep on whirring
“with zero viscosity of the electric field
inside vortices, kinetic energy
can be conserved indefinitely”

The energy is held
“so, when the electron is accelerated
vortices are created
to carry the energy it now has
which appears as magnetic field
and which corresponds
to the relativistic mass”

A downward force on an electron, produces vortices within
clockwise on the left, counter-clockwise on the right
and this agrees with observation, as Marmet enlarges
since “a magnetic field has an opposite spin
on the opposite side of a flow of electric charges”

So “the fundamental nature of a magnetic field
is nothing but the electric field's internal velocity
forming vortices at great distance
and, due to the electric fluid's zero resistance
the vortices inside the electron field are seen to be
permanent internal rotating electric vortices
forming waves which store up the kinetic energy”

I now have some idea
how matter might appear
how compression might produce the solid article
how energy might create the mass/weight of a particle
the more energy in its store
the more compressed the core
– looking at other, far more massive events
energy also compresses to the centre in stars
fusing each of the heavier elements
– there's also the sense that energy held in shape
gives the particle its 'being' since its power can't escape
since these toroids ever-wizz
the energy that 'does' becomes the particle that 'is'

This is Denise the dynamo. Doing things builds up her energy to do more things. And the more she does, the more she radiates and the more she attracts. Nobody loves you when you're down and out, but if you can 'turn yourself around' by doing things, build up your energy, you can become a magnate for people and opportunities.

Sat outside Cafe Rouge at the Marina, on a warm afternoon, sipping wine, I notice those who notice Denise. They either imagine that they've met her before, or realise they've seen her on TV. They are drawn towards her. Denise notices too, even if they don't come over for a chat, an autograph and a photo with her. She's got eyes in the back of her head. We all have.

Sat on a train or a bus, I notice again and again
there's hardly a person who doesn't notice when
someone is looking at them
and this second-sense may have its root
where, in Marmet-speak, all particles
(electron, proton, atom, molecule and so on)
carry with them an absolute frame of reference because
the electromagnetic fields around them act as 'tensors'

If an electron moves horizontally
"the direction and the amplitude rearrange accordingly
they adjust, like perfect gyroscopes, moving in relation
"to always satisfy energy and momentum conservation"

If it's slowed down to zero
"these internal vortices of electric fields
cancel out and disappear, so
we can see that these
moving charges always keep all the information
about their speed and their direction
as a result of electric vortices"

In fact they're "more than perfect gyroscopes"
since they record their velocities
"with respect to an absolute rest frame"
it is self-evident indeed
since "the energy in these vortices
is an exact measure of their absolute speed"

So they know their speed, their direction
and where they are in relation
to the rest of the particle population
and that's every particle in creation

So everything's connected universally
I think the real surprise for me
is that the information is held
by each particle individually
where Beauty and Truth are one
as Structure and Communication
conjuring up a world of sensation
within each gyroscopic fluctuation

This dazzling display of energy we call the sun, is presently floating on yon far western shore and about to disappear for the day on this segment of the spinning Earth. And, after a bottle of wine, Denise may be spinning a bit too. Certainly, plans to see a movie have shifted to passing by Mitch at Video Box on the way home. Mitch is brilliant at second-guessing what we want. Not a formula film where you know the outcome just by looking at the cover. Not an exercise in wish-fulfillment, just life observed. Mitch reviews movies and that's what he likes. This one's German, about the goings-on in a village and its children's choir.

I'm also a bit washed out by the sun, so the adjustment to home viewing is mutual. Getting used to Den being away, albeit only for a few weeks, is harder. It doesn't make any difference to anyone else. Apart from the loud crazy greeting from Smilah, Dandy runs down the stairs and congratulates Mum on her TV job. Dandy's just popped back to collect some things, including the Wee she shares with Sam. And which they're presently playing upstairs.

In years gone by, with the children growing up, I might have stropped, got on my high horse and galloped about for a bit. Now I know it's for the best. Denise will be working and happy. We won't be broke. If Denise attracts more energy than I, it's up to me to build my own momentum.

Strange how relationships qualify and polarise, especially after thirty years.

This, says Marmet "is the fundamental explanation
for energy's quantisation"
it's how each particle relates
that determines each other's quantised states
it isn't surprising, he says
"that the energy states of atoms and nuclei are quantised"
that, say, proton and electron qualify each other specifically
"since each coupling between a different pair of vortices
requires a different amount of energy"

The harmonic series also endorses
Marmet's theories of toroidal forces
as structures are defined by frequencies
and their relationships define each other
as do families, communities, countries, species
Denise and I, me and my brother...

This German film I'm watching (Denise has nodded off) is, on the surface, about tensions in a village after a murder. It's subtext is the rise of fascism, how treatment dished out by the older generation explodes in the young.

*"A free neutron is unstable" Marmet states
"after a few minutes it dissociates
into a proton and electron", this being true
a neutron is a "distorted association" of the two
"adding the mass of the proton and electron
gives the mass of the neutron"
while their charges exactly balance the equation
"all neutral matter is always a combination
of positive and negative charge"
and there we have it: electrons, protons, neutrons
"hollow clouds of electric fields"
that conjure up the world at large*

So, as the movie ends, the camera lingers on "hollow clouds of electric fields" in the form of the children's church choir, letting us know that it was they who committed the murder.

Sam and Dandy have finished their game of virtual tennis and their jubilant entrance disturbs Denise, who creeps off to bed. My children's high spirits this late in the day, revives me. Sam reckons that, while Den's away, he can fix things around the house. Dandy says she'll visit Don and Stella during the period. Watch how quickly they adapt.

Maybe that's what happens over a lifetime. You start as a vibrant interplay of forces like a hydrogen atom where, gradually, the proton and electron merge into a "distorted association" of the two. Maybe I've become a neutron. The positive and negative forces are still in me, but the charges neutralise each other, forming mass. I'm the anchor. If so, tis a blessed compromise, even a state of bliss, which I know as Sam gets me a coke from the fridge and Dandy blows me a goodnight kiss.

*Great – except that, via Paul Marmet
I've learned from another text
that there's something wrong with the Big Bang Theory
whatever next!*

*Paul Marmet, Ph. D. (1932-2005)
pioneered the electron spectrometer
during his Ph. D. thesis (1960). It is used
to study the internal structure of atoms and molecules.
1967-82, director of Atomic and Molecular Physics, Laval University
from 1981-2 he was President of the Canadian Association of Physicists
while in 1981 he received the 'Order of Canada', Canada's highest decoration
1983-90 Senior Researcher, Herzberg Institute of Astrophysics, Ottawa. He died in 2005.*

9 Bang!

Whenever one breaks a convention or taboo, energy is released. My brother Richard has made a speciality of it. Taking the puncturing of pomposity to new heights, he can subvert even the most benign aspiration. As when I call and say, Hi Richard, it's Paul, and he says, So? He explodes any opening gambit, originally perhaps to avoid a lecture, to change the subject. A neat sideswipe makes him unassailable. I resort to implosive silence. Eventually he says he'll be back with Mum and Dad by the time we get there. And that's that, no excess chit-chat. No breeching of the defenses, no threat to the inner calm, no change to the status quo.

On the other hand, when an entity closes in upon itself – such as Japan for hundreds of years until the mid nineteenth century – or when an idea becomes a dogma – its energy winds down and, in its increasingly entropic state, becomes ripe for the picking. And that may well be what's happening to the Big Bang Theory now. Whatever the truth, the letter published a few years ago in New Scientist and now disseminating on the internet, gives this emperor of theories a right royal disrobing. And it isn't the clothes which turn out to be invisible, but the emperor himself.

Richard pulls up just as we arrive. Our lot trundle over to greet them. Mum looks fragile but well. A couple of years ago, coming out of a shop, a gust of wind knocked her over. I'm always worried she won't lift her feet enough as she walks and an unevenness will trip her up, so I tend to stay close and clear her path. Mum has white hair, a clear complexion but with thousands of lines like a street-map of London and mottled, skeletal arthritic hands which nonetheless hold their own fascination. Dad is not paper-thin like Mum, but bent over and dried in the sun, a little old Jew, a walnut. Richard and I embrace. He tells me I look older. I tell him he looks shorter.

Although their house is on a main road, with the doors and windows open on the garden side, the living-dining room provides a sunny family haven. Karen is busy in the little galley kitchen beyond, but comes out to join in the merry dance of hellos. It is Karen who makes these monthly meetings of the clan possible, emailing us, preparing the sunday feast. She's a senior social worker for Westminster Council, Richard an administrator for the same august body. I watch their son Joe in a swift armclasp with Sam, their petite daughter Kate immediately chatting with Dandy. But everyone must make contact with everyone before the dance is through.

Yet in a flash the oldies have found seats, drinks have been ordered and the four kids have whisked themselves away to a virtual world next door. Mum is on the sofa with Denise and Karen each side. Richard, Eric and I in easychairs form a little arc around them. Eric asks me what I'm up to at the moment. Investigating the Big Bang Theory, I say. Why? asks Richard. Eric asks What have you learned? That it may not be correct. How would you know? asks Richard. So I pull out my wadge of notes and hand him a copy of the New Scientist letter.

Richard gets his glasses and casts his eyes
down the **“Open Letter to the Scientific Community”**
that's got me so unnerved
it starts “The big bang today relies
on a growing number of hypothetical entities
things that we have never observed”

As if it weren't enough
that the theory isn't based on observation
the maths itself is duff
which is why they keep on adding stuff
from their imagination

"Inflation, dark matter and dark energy"
are the main "fudge factors" that lurk
without which the theory don't work
"in no other field of physics" would it be okay
to continually add "new hypothetical objects as a way
of bridging the gap between theory and observation"

Without the hypothetical field to account for inflation
the big bang will not yield the observed and uniform background radiation

Without dark matter
(which still evades our every sense
"despite 20 years of experiments")
inflation requires matter to be twenty times as dense
as "that implied by big bang nucleosynthesis
the theory's explanation for the origin of the light elements"

Without dark energy, the theory says the universe began 8 billion years ago
it's "billions of years younger" than the age of many stars we now know
the theory has made no successful predictions
except by retrospective 'add-ons', fictions
theoretical manifestations to fit new observations

"Yet the big bang is not the only framework available"
by which we may realise and comprehend
"plasma cosmology and the steady-state model both hypothesise
an evolving universe without beginning or end

These and other alternative approaches" can also account
for "the basic phenomena", such as the amount
"of light elements, ... large-scale structure generation
...how redshift increases with distance
...the cosmic background radiation"
they have even made predictions
which have turned out to be true
"something the big bang has failed to do"

Yet their development has been ignored
“questions and alternatives
cannot even be freely discussed”
new ideas cannot be explored
for complete lack of funding and trust
whereas Feynman could spout
that “science is the culture of doubt”
young scientists now dare not open their gobs
for fear of their jobs

While Richard’s reading, I remind Dad of Big Bang’s theory of creation
tell him that the letter is a devastating denunciation
it’s the whole scientific establishment they’re admonishing
and the sheer number of signatories is astonishing
like stars in the Milky Way
pages and pages listing the noble resolutions
of highly respected scientists in the pay
of highly respected global institutions
obviously passionate about what they say
that the theory’s a fiction
whose proponents prohibit any contradiction
at the very least, these dissidents’ defiance
poses a problem for the integrity of science
I mean, what could be daffier
than a scientific mafia

However, Richard has finished reading and he’s furious. To him the whole thing’s spurious. Science changes all the time, he informs me. You can’t keep up with it. It makes no difference anyhow. And why are you, who know nothing about it, wasting your time? Because I’m interested, I reply.

Richard leaves the conversation but kind Eric humours me. Any theory must be grounded in reality, I say. Eric nods. But in a relative universe there’s no fixed point, no absolute truth. This is also the basis of democracy, where everyone’s point of view carries equal weight. – But is not thereby correct, Dad interjects. Who can say? I ask. Well, if it’s a stone and someone says it’s a pig, they’re wrong, he counters. Only because we agree to call it a stone, I retort. But if you don’t agree what to call it, there’s no language, no communication! he insists, getting excited. I agree.

Things must make sense
and the Big Bang’s foundation
its basic information about
redshift, microwave background radiation
and the age of the universe
are all seriously in doubt

Richard frowns at me and there's something going on with the ladies, but it's not often I get Dad listening, so I fumble for my notes and tell him straight.

First, when lightwaves interact with atoms, they lose a tiny part of their energy
so, the further away the galaxy, the lower its frequency
this 'redshift' helps us calculate how far
from us these galaxies are
but it doesn't mean to say
they're moving away
and that's the crucial disparity
since, if the universe isn't expanding
you can't work back to a 'singularity'
Bang

Eric looks surprised, though, perhaps it's because I said 'bang' rather loudly. The sudden silence in the room confirms this.

Secondly, in 1926, Sir Arthur Eddington predicts
the lowest temperature to which any body in space would cool
at 2.73°K , the observed 'cosmic microwave background radiation'
is almost exactly Sir Arthur's calculation and seems absolutely right
as the limiting temperature of space warmed by starlight, not at all
the remnant of a fireball
Bang!

Eric seems bemused, but I'm on a roll, so lastly, there's the cosmic birth
said to be 13.75 billion years ago, just 3 times the age of Earth
galactic clusters have been found
that could not have been around for less than 100 billion years
and, given that it takes many generations
before metal content appears
the earliest types of star, quasar and galaxy
were predicted to be metal-free
whereas recent evidence suggests the opposite
they've got loads of it

In 1989 the "Great Wall" of galaxies was discovered, 2 – 300 million light-years away
its dimensions, 15 hundred-thousand cubic lightyears, limited only by the scale of the survey
Margaret Geller, of the Harvard-Smithsonian Center for Astrophysics, saw the significance
saying "something is really wrong that makes a big difference"
so, faster than the speed at which light travels
from here, the whole theory unravels

What do you think we should do, Paul? asks Richard. Invent a new theory I suppose. About Denise, he says calmly. It seems that Denise has left the room after Mum has told her she's too fat for her new performance dress, which she's wearing. Richard's going to support Denise. I'll be through in a tick I say. I'm upset. Karen is still sitting beside Mum, smiling but silent. Mum is sitting primly, looking at no one. Eric, oblivious, sips wine. I ask Mum why she'd say such an unkind thing. In a clipped voice, she tells me that she's allowed to express her opinion, repeats that the dress is unsuitable and that she was just being a good friend. Some friend, I think and leave the room.

Next door, Dandy's comforting her Mum, Richard standing nervously by. In an attempt to brush it aside, I say, we all know about Mum's negativity, we've been affected by it all our lives. More like infected, says my brother, which surprises me. We don't talk about how deep it goes.

I can hear Karen issuing commands to Joe, Kate and Sam, hurriedly getting food on the table. Richard sidles out. I join Dandy, kissing Denise, trying to coax her through. Margaret always says these things, Denise, it's her problem not yours, darling. Finally Karen whirls in, Come on Denise – the show must go on!

During the meal, Eric, expanding with drink, begins to discuss the wars in the Middle East. I won't get involved this time. I'll stay close to Denise, who's prodding her food. But Richard patiently applies logic, reasoning with Dad. Karen sits by Margaret and helps her. The kids down the other end seem perfectly happy.

After the meal, Denise goes for a snooze. I pop into the garden for a cigarette. Kate is sitting on the bench and asks me about the New Scientist letter. She's overheard what I was saying to Dad and has been studying the Big Bang Theory for her physics exam. The trouble with these courses is that they teach students facts and formulae, instead of teaching them to think. When I say the real question is the principle – Does energy become all the matter we see? – she says, How can energy make matter? I say, But Kate, that's the Big Bang Theory. An energy singularity creates all this! She's imagined an explosion of things. I say, That's not the theory. She says, Well I don't know. I'm interested in chemistry, because it's practical. Well, I think, if she's not interested in principles, she'd better have the details. I'll challenge her.

How does a universe form from nothing, from a virtual 'fluctuation'
quite apart from violating energy-matter conservation
the virtual fluctuations we see (photons appearing in empty spaces)
are a momentary and miniscule observation
while the Big Bang has both massive energy and duration
on what basis

Next, all parts of the proposed universe are supposed to expand simultaneously
no method has been suggested to co-ordinate this wizardry
furthermore the theory of inflation
is based on the theory of fundamental particles
which itself has no foundation
simply one hypothetical brother
supports the hypothetical other

Next, the idea that the universe inflates
then 'brakes' again without cause
is an ad-hoc invention, a fantasy
contradicting all scientific laws
by having constants change conveniently

Next, if the initial explosion creates equal amounts of antimatter and matter
how come some form of 'asymmetry' causes a slaughter
favouring the latter
add to all that, dark matter and dark energy
and you've got 96% of the big bang theory
that doesn't do what it oughta
poof goes the proof
and bang bang bang bang bang
the weary theory's dead in the water

I look round, notice that Kate is no longer beside me and that there are raised voices within. Eric and Richard's debate has escalated into a heated discussion, more commonly called a row. In the vain hope of quelling the uprising, I enter the fray.

"You sound as if you're frightened of the Arabs, Dad."

"Of course I'm frightened!" he shouts, his ancient head almost exploding.

Of course he's frightened. "But I thought you brought us up to stand back and apply reason."

"We should have stopped Hitler sooner. That's what we're doing in the Middle East now."

"What, killing people?" I ask, as Richard tiptoes out.

"Well sometimes it's unavoidable" he says.

Sam intervenes quietly. "What difference does it make what we think?"

"It makes a tremendous difference" Dad insists. "If we don't speak our minds, they can get away with anything!"

Like murder? I think, wandering out to see how Denise is. She's not on the bed upstairs, Richard is. Denise is in the front room and looking bright again. She tells me that my brother has a headache and she'd be prepared to drive Margaret and Eric home, if Sam and I would take the train. Dandy will make her own way back to Wimbledon. This is interrupted by Karen, informing us that Eric and Margaret are laying into Sam for not having voted in the recent election.

In the living room, Sam is silent. Mum and Dad sit on either side of him like two old vultures, while Dad bludgeons Sam. Answer me that! Answer me that! he demands. To them, not voting is an outrage. Their generation fought for freedom. Sam is advocating a return to slavery. I interpose. No one can know if they're right, I suggest. People are entitled to their opinions. Eric says, So I'm allowed to mine. Yes, but not to shout and insist, I shout and insist.

Denise and I are taking Eric and Margaret home. Eric is apologetic, before dozing off in the back. Mum says, crossly, that Sam should get qualifications and make something of himself. So there's silence. Once we've delivered them back to their home, with kisses and love, Denise curls up in the back with Smilah and I drive.

Since the big bang theory first held sway
we've walked on the moon, sent spacecrafts off to explore the Milky Way
and with more and more data about, as the news has streamed in, the theory's streamed out

However, the debate points to a far deeper scientific division
in the Copenhagen Doctrine the quantum physicists made a decision
to chuck out the scientific method, specifically to dispense with observation
in favour of theoretical calculation
and there's one thing a retreat from reality will always achieve
people will start to believe what they want to believe

And here, what they want to believe, is a world with ceilings, walls and floors
a world of point particles, fixed processes, since their cause
is to determine irrefutable, immutable laws
yet, if universal laws are static
dependable, defensible, never erratic
there's only one solution
everything is predestined
and the universe is on automatic
so, where's the evolution

It's either a repeating universe where you fix your star
or an evolving world, where you don't know where you are
a divide between human types perhaps
between the fancy-free and the bolt-it-down chaps
between those who want the centre to hold so they feel safe at home
and those who wish to break the mold or at least seek the right to roam
either way, I ought to see what gives
with some of the alternatives
and due to the letter's copious lists
I'm aware that, globally, there exists
a load of these dissident scientists
with very different takes on reality to commend
and then, there's that line in the letter to test:
"an evolving universe without beginning or end"
certainly there's nothing to suggest
that this universal spinning
will ever be at rest
or ever had a beginning
so that needs resolving
we say energy does the biz
but, if it always is
can it be evolving

10 Wonders or Blunders

two bloggers on the Physics Forum – 1st: There are many 'crackpot' scientific theories to be found online, but I was horrified by the sheer scale and volume of the unscientific, unfounded, misinterpreted rubbish! Are such crackpot theories dangerous, and if so what action should be taken to limit the damage they do?
2nd: The problem is that even respectable scientists call each other crackpots.

I'm not interested in the politics of science, only what insights might appear
yet, from the start I've found smokescreens, conflicts obscuring almost every idea
not just lack of communication between each specialisation
but each intellectual palace defending its own sacred chalice
and where one also finds narrow minds and malice

("Never attribute to malice that which can be adequately explained by stupidity, but don't rule out malice." Heinlein's Razor)

Brighton station's belching out people, there's always some event, classic cars, motorbikes, Gay Pride or some festival. Fighting my way through against the current I dive into an almost empty train.

Power, status, money, careers, that's it basically, and fears
each alternative theory may mean others come to grief
threatening jobs, funding, the respect (ha ha) of peers
and this strange thing called 'belief'
I thought if we could see behind the curtain
there'd be agreement, now I'm not so certain

My Granddad liked a joke about a bigot, blind with pride
there are no such things as camels, he'd insist
so they brought a camel to him, whereupon he cried
take that beast away, it can't exist

("Men occasionally stumble over the truth but most of them pick themselves up and carry on as if nothing ever happened." Winston Churchill)

A great flash of yellow lightning, followed by a crack of thunder, makes me look up from my laptop. The few other passengers and I share nervous grins. What are we doing in this metal tube? The heavens open and we're bombarded by sleet.

Insecurity brings out the worst, there are 2 insecurities here
not knowing the answer is the first, then there's the answer that fills us with fear
it's easy to take potshots at crackpots, but those who give their lives to pursue an idea
are at least likely to be sincere

No matter what the weather's like, I will not funnel myself down into the London tube. I'll walk. Sleet has softened to rain. I hide the laptop under my flowery shirt, as if that will protect it.

Erwin Schrödinger was a strange, poetic man who won a Nobel Prize who carried a rucksack on his back, looked like a tramp and thus disguised described a world in disguise his equation concerning quantum wave function (1927) stated that with any particle, there's a wave associated and though it appears to be strongest at its centre, it spreads out to infinity so a particle is not finite in one time and place "what we observe as material bodies and forces," he says "are nothing but shapes and variations in the structure of space particles are just 'schaumkommen' (appearances)"

His equation's said to be "the most complete description that can be given to a physical system from the subatomic to the macroscopic, possibly the whole universe" this is the world in wave-form and to some it's like a curse physics is based on material things, so nothing could be worse than what Einstein and Schrödinger realise that matter is energy in disguise

London's like one vast Brighton station, everyone pushing and shoving. Sun's come out. I stop to check my laptop. The file on Milo Wolff pops up. What's this bastard got to say for himself?

Milo Wolff worked on the navigation system for the Apollo moon-shot he worked for NASA, the UN, Aerospace and other international giants, so unqualified, he is not but his research is inconsistent with present mainstream science so he's a crackpot

Referring to Wyle, Schrödinger, Clifford, and Einstein that matter's merely "undulations in the fabric of space", to "Wheeler and Feynman who first modeled electrons as spherical inward-outward waves, seeking the response of the universe" Wolff's 'Wave Structure of Matter' describes the electron as the cause of the natural laws, predicting all properties we may care to reflect on "including its 'spin', in accord with quantum, the Dirac Equation and the previously-understood structure of the electron" – this is what makes me want to spit he applies his wave-structure-of-matter shit to the other laws of science and finds they fit!

"The electron is comprised of two spherical scalar waves", this includes "one inward and one outward, superimposed at the origin, with opposite amplitudes" "A reversal of the inward wave occurs at the center, when spin rotates the inward to become the outward wave, which then induces a response of the universe", feedback, which becomes the inward wave again a 'space resonance' – a receiver/transmitter – a pulse – a single fluctuation "a single resonant standing wave in space, centered at the electron's nominal location"

“Spherical rotation is an astonishing property of space”

where a double, in-out, rotation returns space to its original configuration
thus combining co-ordination and communication with simplicity and grace
where particle-structure and energy-exchange are one
and “there is nothing but space”

– if Milo were here today he’d see my fist
I’d say take your theory away, it can’t exist

Where am I? I’m in fucking Trafalgar Square on a fountain wall, beside a stone lion, in a furnace of sunshine, pinned in by a torture of tourists. Thousands of standing waves all transmitting and receiving. Why am I here? I’ve come the wrong way. Where am I going? Nothing to do but beat a path through, hope there’s a bus from Regent Street and that the traffic’s flowing. All I want to do is get to Pam’s.

While Marmet and Wolff consider
the process from waves into stuff we can see
it’s ‘big space’ we are looking at, with Alfvén’s ‘Plasma Cosmology’
to conventional science he is seen as a sinner
but there’s not much they can do, since Hannes Alfvén (1908-95) is a Nobel Prizewinner

There’s a bus. I leap on as the doors open and get pushed up against the driver’s kiosk by a rabble of irate queuers. Bayswater? I gasp. He nods, I pay and lunge upstairs to an empty seat at the front. Regent Street’s in log-jam but I’m immersed in plasma.

Derived from blood plasma and describing
the almost life-like and self-organising
highly electromagnetically-conductive properties arising
from this inconceivably hot mix of electrons and protons
which makes up at least 99% of all mass
plasma is the 1st state of matter, before solid, liquid or gas

Rivers of plasma flow between the centres of galaxies
whipped up by quasars to form stellar nurseries
these are the umbilical cords that nurse
feed, generate and regenerate the universe

The surface of the Sun is plasma
neon lights and TV screens
electrical arc welding machines
fire and lightning too
emitting light when charged, as polar auroras do

So fire is plasma. I squint at the sun but only succeed in blinding myself. I feel like a disassociated negative electron shunted along a plasma stream. Where are we? Just coming up to Lancaster Gate. I used to work at that hotel. Sunday job in my teens. Everything here is like a mirage of my past, a trick of the light and I'm back. Park railings are strung with paintings. I used to think, what a wonderful liberal tradition. Now I think what a heap of trash. Each time the bus stops, I'm faced with another patchwork quilt of awfulness. It's just rage. I don't like not knowing what I'm doing. Why should I imagine I can understand these scientific notions and why is it coming out in rhyme? What is the journey and where does it go? It's without rhyme or reason. Pam will know.

We've observed vast plasma flows
"spanning hundreds-of-thousands of light years"
flexible and complex, forming ribbons, spirals, dynamos
cellular structures, currents, filaments, magnetospheres...
but no black holes, apparently not
"in truth it is the plasmoid" – the what?

No black holes indeed. They're making it up! Of course they're making it up. Everything's making everything up. Streams of unconsciousness, like the Bayswater Road, an endless corridor of shops and restaurants bathed in orange light and teeming with vacant shoppers and eaters. A veritable miasma of plasma.

This plasma lot insist they're steering clear
of theory, "no exotic science is postulated here"
yet they describe a living cosmos which they all agree
"has always existed, has always evolved
and will continue to exist and evolve for eternity"

Keith answers the door. Come in, he says, I'm going out. Off to see Jonny. – Jonny? I gasp. Yes, Pam's downstairs. I'll be back later. Downstairs, ambushed by Pam's yappy dogs, I ask Pam if she'd like a cuppa. What a good idea, she says.

A few days ago she was in hospital but she seems fine, surveying footballers lining up on the screen ("such a softy" or "probably a wife-beater"). When she asks what I'm up to, I mention problems with the writing. It's either narrow-minded mainstream or wacky dissidents. Oh don't go with the boring ones, she says with a laugh. I don't even know what form to write in, I admit. Some of it's coming out in verse, as for structure... Just keep writing, she assures me, the content will decide. A whistle blows and the football match begins. I'll have to leave before it ends.

Pam is always Pam yet in disguise
she always wears an expression to divert you from those eyes
those searchlights in her face, tunnels through time and space
what is this human race – what is she doing in this place
and yet it is within those eyes that I touch base

Pam is dusting surfaces, she's removing grime
I'm following her about, asking questions all the time
now she's in the kitchen, rattling saucepan lids
but there's a place I dare not follow, a place which fate forbids
for Pam is in her study – ssh!
Pam is in her study – ssssh!
Pam is in her study she is writing now
holy cow

Writing? – why's she writing? – it's a sunny day
all the happy smiling folk have danced outdoors to play
but for Pam that's not inviting, no she would rather stay
besides, her muse is calling and she must obey
so Pam is in her study – ssh!
Pam is in her study – ssssh!
Pam is in her study she is writing now
holy cow

She'll run away from premieres, parties, crap she can't control
as if any such occasion might swallow her whole
more like invasions than occasions, bless her solitary soul

But I am with her over 40 years, we're in the south of Spain
in Newcastle one winter, Isle of Wight in driving rain
one glorious Edinburgh where she actually took a bow
but when I cannot follow, when fate will not allow
I'll know that Pam is in her study – ssh!
Pam is in her study – ssh...
Pam is in her study she is writing now
my holy cow

Returning, Keith inveigles me into the conservatory. Glass of Wine? No thanks Keith, so you've been to see Jonny. Yes, I've just been over there, how did you know? You told me. Did I? Well he's much better. He's excused his depressed behavior, been round to see Pam. That's wonderful Keith. Yes, the one blot on my lucky life has gone. So, are Jonny and David speaking? I ask. Not for 30 years. Sara's on her way over, though. Midweek, I think. She's yet to confirm. Can I get you another drink? His eyes search for my glass. Keith, I'm going to have to leave, I'm afraid. It's Denise's mum's birthday and she's not well. I've got to get down to Portsmouth by three. Pity, he says. Jonny says he might be round later on. I expect you two would like to catch up. Soon, I say.

I'm late. When I tell the cab driver, he puts on a stomach-churning display of backroutes and speed, delivers me onto a vibrating train.

There's no biography for Ray Tomes, except that he lives in New Zealand. Hmm...

Citing the work that Einstein, Schrödinger etcetera have done
and describing the universe as “a wave phenomenon” (not another one)
Tomes’ Harmonics Theory’s based on the harmonic series
integral to all electromagnetic frequencies
it determines the structure and space between ‘things’
“from nucleons and atoms through to planets and galaxies”
(putting ‘things’ in quotes is apparently not a whim
since there are “no such things as things” – I think I’ll kill him)

Describing how resonance behaves, Ray Tomes makes the claim
that “the universe consists of a standing wave
which develops harmonically-related standing waves
and each of these does the same”
the frequency patterns of waves formed in the universe can thus be explored
by harmonic generation, and some very clear patterns are the reward
since the strongest harmonics are 48, 60, 72 and 96
which in music is a major chord”

Tomes then notes other more complex contortions
harmonics of quantum and cosmic proportions... but I’ve got his ideas
the universe is a major chord, we’re back with music of the spheres
and Tomes is some new-age harmony preacher
...on the other hand, if the universe comes in wave-form
harmonics will be an inherent feature...

The moment the cab dumps me at Carol and Duncan’s, I can hear the hubbub in the garden. The party’s ripe. After buses, cabs, trains and with these wave theories buzzing round my head, there are just too many people to say hello to all at once. Better let Denise know I’ve arrived.

The deep green lawn has sprouted a bumper crop of moderate middleaged men with drinks, their lady wives like garden blooms, tulips, roses, daffodils, the odd snapdragon, clumps of young people, a scattering of seated old ones. My god! Yvonne is here. She’s Duncan’s mum and has advanced alzheimers. Last I heard she hadn’t any memory left, was aggressive and didn’t know where she was. I know how she feels. Perhaps not.

Denise wraps her arms around me. Sam is at the barbiecue, she points. Dandy is with Stella, there. I see but can’t quite register. Dandy gives me a hug, sits me down in her place and skips away in a sparkle of sound and light. I’m sat between Stella and Yvonne. We form a triumvirate of hollow electrons. Sam materialises with a coke and a mountain of charcoaled meat. Thanks Sam. But he’s disappeared.

Where is James? asks Yvonne. I haven’t seen him, says Stella. Where is he? asks Yvonne. He may have gone inside, Stella suggests. Have you seen him Paul? I don’t know who James is, I admit. Yes, says Stella, turning to Yvonne. Who is James? Carol comes over to welcome me. Stella tells her daughter that Yvonne wants to know where James is. Do you know where he is, Carol? Carol crouches beside Yvonne. James is dead, she says. He died 15 years ago so he won’t be here

today. You just sit here and be happy, because there's nothing to worry about. Perhaps you'd like another drink, Yvonne. Who is Yvonne? You're Yvonne. Carol gives a sweet embarrassed laugh.

I consider telling Yvonne about the eternally evolving plasma web but think the better of it. It's one thing to conceive of the inconceivable, quite another to get sucked into it. Did Carol tell her where James is? Stella asks me. Where is James? asks Yvonne. I say I'm just going inside to check.

Passing through the kitchen, I hear Carol say it's hopeless because, let's face it, the lower echelons are thick as pigshit and when a girl from the lower echelons gets herself pregnant, as they do all the time, they haven't the means to support it and who's going to want some thick-as-pigshit baby? A mumbling of guests builds to a chorus of equally moderate opinions. Each resonance producing a series of harmonics, each of which becoming the fundamental for the next. This endless sprouting of new harmonic series, the clatter of crockery and the barking of dogs, drives me into the lounge, where Don is sitting quietly.

Third son of a teacher, his mum went into an asylum after his birth and never came out, so Don joined the navy and became an engineer. He's curious, wants to know how things work. We share books, so I tell him about Wolff's waves, Alfvén's plasma and Tómas's harmonics. The universe is a major chord, I say. But Don isn't listening. Stella is being helped in by daughters Carol and Denise and everyone seems to swirl in after them. Amid the chatter, Stella is repeating her catchphrase, aren't we lucky. I turn to Don. He's gazing at his wife with a look of profound tenderness. Makes me gasp. At once, noise and dissonance distils into the major chord of love.

Watching Stella in her chair
surrounded by her family
smiling sweetly
aren't we lucky

When I was young I saw a world of wonder
there is a plan for you whichever way you view it
this is what to do and this is how to do it

But then the real world crashed in like thunder
the real world was crazy and I knew it
it was nasty, greedy, lazy, so I blew it – screw it

Now having lived through blunder after blunder
I won't take life on trust, first I'll review it
then if a course seems just, I may pursue it

But one day soon, my life a glowing ember
I may return to wonder, may remember
life is a gift
a nursery rhyme
the sweeter still
come closing time
aren't we lucky

11 One Clear Voice

Paul Marmet got the sack
for “questioning the fundamental principles of physics”
I’ve great sympathy for the mavericks
each presents a burgeoning wave-world without beginning or end
but are they on the trail or, sadly, round the bend
crackshots or crackpots, with clarion calls or clangers
I need one clear voice to make sense
of this war between point-particle Big Bangers
and wave-world dissidents

And I think I’ve just found the man I need
a very distinguished chap indeed
who goes by the name of Carver Mead
he’s not one of the dissidents
nor does he speak in their defence
his interview with American Spectator
begins with his accomplishments

Mead was “Feynman's student, colleague and collaborator
as well as physicist in residence and the leading intellectual in Silicon Valley
in a career of nearly half a century
that has made him the most influential and creative academic in the microchip industry”

“Best known as inventor of a crucial high frequency transistor
also author of dominant chip design techniques, progenitor
of the movement toward dynamically programmable logic chips, developer
of radical advances in machine-aided perception
with Feynman he developed a definitive course
on the physics of computation
he’s studied neural systems in a multi-disciplinary exploration
with Nobel-prize-winning Max Delbruck
while research on the human retina
led to his invention of the revolutionary Foveon camera
study of the cochlea informed the creation
of unique directional hearing aids” and this unquenchable thirst
earned him the half-million-dollar MIT-Lemelson award for innovation
yet “any list of accomplishments underrates Mead's role” as the most well-versed
“most important practical scientist of the late twentieth century
now emerging as the boldest theoretical physicist of the twenty-first”

Mead believes it's time to clear up the philosophical
and practical confusion of contemporary physics
having developed a growing uneasiness about the 'standard model'
not seeing his electrons and photons performing random or incoherent tricks
he now regards the concept of the point particle as twaddle
and forgoing conceptualism for realism
"believes he can explain the famous mysteries of quantum" and resolve the schism
between the Copenhagen doctrine of Heisenberg and Bohr
and the wave world of Einstein and Schrödinger
"in his new interpretation, quantum physics is united with electromagnetism"
pointing to a series of experiments from the world of microelectronic and photonic design
"Mead rectifies an injustice and awards a posthumous victory to Einstein"
and regarding Niels Bohr
let Carver himself take the floor

"Modern science began with mechanics
and in some ways, we are still captive to its ideas and images
to Niels Bohr, the atom was a miniature solar system
with a nucleus as the sun and electrons as planets
out of the struggle to understand the atom
came quantum mechanics"

"Bohr gathered the early contributors into a clan in Copenhagen
and he encouraged them to believe that they were
developing the ultimate theory of nature
Bohr insisted that, at the most fundamental level
the laws of physics are statistical"
for which we've paid the price
since their 'Copenhagen Interpretation' is essentially a deal
to forgo observation, whereas Einstein, who lost, said 'the Lord does not throw dice'
"he believed that electrons were real"

"Born in 1934, I grew up in California, we lived in a place called Big Creek
around the turn of the century they built a series of dams and power plants up there
I learned about electricity just by being around it, it was everywhere
my father worked in the power plant
there was all this war-surplus electronics, dirt cheap
you could try things, just to see what happened
electricity may be invisible, but it is powerful stuff"
so he knew soon enough that, whatever the deal
"the electrons were real, the voltages were real
the phase of the sine-wave was real, the current was real"

But they're also waves, so what are they waving in?
“that's the missing piece of intuition” that needs clarifying
“the electron isn't the disturbance of something else, it is its own thing
the electron is the thing that's wiggling
and the wave is the electron, it is its own medium
the electron has no fixed physical shape at all
waves propagate outwards and they can be large or small”

An electron, any place
will expand to fill all available space
in a cable it'll conspire
to “fill out the piece of wire”
that goes for protons too
because “that's what all waves do”

Confine them and you raise their strengths
that's Heisenberg's 'Uncertainty'
“but there's nothing uncertain about it
it's just an innate wave property
in a smaller space you have more wavelengths
and that means a higher frequency and energy”

But “a quantum wave also tends to go
to the state of lowest energy, so
it will expand if you let it, becoming less dense
you can make an electron that's ten feet across” and that makes sense
because “it's its own medium, right?” there's nothing wrong
“the electrons in my superconducting magnet are a mile long”

Their potentially infinite size
may come as a surprise
since atoms are tiny but, to explain
a hydrogen atom may seem like “this little grain
but what that is in fact
is a self-consistent solution of how its two waves interact”
positive proton and negative electron attract
when they get close, the energy's lower
but too close in touch, they wiggle too much
so they need to go slower
thus defining its lowest energy state, an atom will realise
its specific tiny size and this optimum relation
is a “self-consistent solution of the Schrödinger equation”

“Bohr and his followers said ‘well, an atom is so small, we’ll never see one’
now we not only see them, we see how they behave
get them in a coherent state “and you get Bose-Einstein condensate
a bunch of atoms in phase that act like one big matter wave”
then the wave nature of matter is easy to chart
and “you can see quite visibly what matter is down at its heart”

The experiments from which quantum mechanics was construed
were, by today’s standards, “extremely crude”
furthermore, the double slit experiments
use “a point-particle model for the ‘photon’, a little bullet” carrying energy about
“if you define the problem this way, of course you get nonsense
garbage in, garbage out”

Mead does not dismiss the interplay, known as ‘non-locality’
of entities, though far away, affecting each other instantly
this ‘tunneling’ may be looked upon
as an “intelligible wave phenomenon”
“the quantum world is a world of waves
so we have to think of electron waves and proton waves and so on”
whereas “Bohr was wedded to particles” so his only defence
was to concoct “conceptual nonsense”

“If you take the standard theory of gravity and the theory that particle physicists propose
to measure how much matter there is in the universe, the resulting calculation
is well known to be ‘off’ by 10^{50} , that’s 10 followed by 49 zeroes”
and all of this bull is based on the ‘point particle’, a creation
“assumed to occupy no space, yet with infinite charge, mass and energy density
these infinities then get removed by something called ‘renormalization’
it’s all completely crazy, but our physics community
has been hammering away at it” for almost half a century
“with band-aids stuck on top of one another” the theory’s indefensible
“generations of students were driven out of physics because it was no longer comprehensible
the connection between the quantum stuff and the electrodynamics in my book
took me thirty years to figure out and in the end it was so simple”
but “all of this historical junk” made it very hard indeed
we’ll have to start again – with waves instead of particles – in order to proceed
“and that is going to take real work” says Carver Mead

I pick Denise up from the station. She spent the night at the hospital with Pam. Jonny was there, Keith of course, David. Sara’s on her way. Inside the restaurant, everyone’s in halos of light, the Moroccan designs hypnotise. They don’t depict things, but generate energy. We have lamb, cous cous and wine. Lovely to sit with your life-long partner and just be together.

It's a clear, calm night, driving home. As we get out of the car, Denise, checking her phone, gives a cry of alarm. I turn back. There's a message from Keith.

"Hello darling. Bad news I'm afraid. Pam's gone. She went without any pain at all. She was looked after by this wonderful Macmillan nurse. Turn right! And so that's the way we'd all like to go... Right! – Well you suddenly accelerated and I wondered what was happening. ...Well that's miles away, turn left. And anyway, the whole... Oh I can't help it, I've had it with Tom. This is rough. The thing is, go right to the end of the path. I'm trying to phone and er, concentrate. And the thing is that we had this wonderful Macmillan nurse. It was really really good, oh, ha ha, if you can call it good. Anyway, there we are. So now we're going back to the hospital, to just have one last look at Pam. I don't know what they're going to be doing tomorrow, but, of course I shall be finding out. Whether they'll bustle her away or what. Anyway darling, I'll keep in touch. Love to Paul. And, believe me darling, when your time comes, if you go this way, you'll be lucky. Bye."

We sit for a while in the living room. I go outside and sit on the swing chair.

There are no such things as things
only processes and waves
breathtaking to see the way
pure energy behaves

A beam of light that streams
into a visionary space
to seem like something wobbling
in a real time and place

A sense of something moving
an appearance passing through
its context an illusion
its point a point of view

Could be an angel's beating wings
or other wild imaginings
for there are no such things as things

But a fabric formed of standing waves
where each absorbs reflects
transforming at its centre
to create the field effects

A rippling field of energy
a vision here and gone
a Mexican wave where no one moves
and yet the wave flows on

A world of dazzling microspheres
a sea of vital sparks
of elemental creatures
call them photons gluons quarks

Could be vibrating superstrings
but as this cosmic chorus sings
there are no such things as things

Heat and light play tricks
from twelve to ninety-six
a fundamental frequency
developing harmonics

Divisions of vibration
feedback fluctuation
as peaks catch up with troughs
in harmonic generation

Of rainbow supersonics
of fifths and thirds from tonics
the intervals all musical
harmonics from harmonics

And the strongest that appears
spanning infinite light-years
is one enormous major chord
music of the spheres

Each fluctuating wavelength
variations on a theme
electrons protons ions
plasma currents in the stream

Where a proton and electron
may find neutrality
and marry as a neutron
or alternatively

An electron finds a nucleus
and falls within its spell
spins an orbit round it
forms the atom's shell

Whether seeking equilibrium
or avoiding tedium
waves propagate in quantum space
where message is the medium

Where feedback's information
where a single clear vibration
self organising sensate
forms the seed of our creation

From waves and resonant couplings
orbitals and spirallings
from light and all its offsprings
lumps of rock or earthlings
running rings around the rings
around the facts to which man clings
even these superfluous rhymings
energy provides the makings

So one atom is a liquid
another is a gas
but none of them are solid
forcefields masquerade as mass

And no matter what the future brings
ain't no such things
as things

The world-as-energy is an eastern domain
the west is so invested in materialism
I don't know if we can ever attain 'true electromagnetism'
but I can't hang around, waiting for science to yield
Pam taught me to come at things 'left field'
instead of marching forward like an army attacking the unknown, wait
allow a seed you've sown to germinate
be awake but don't pursue
inadvertent observations usually ring true
and while science stands aloof, waylaid providing
hadron-colliding proof of its point-particle zoo
looking at the world 'left field' is what I'm compelled to do
held within Pam's fierce gaze, remembering those days
if one way's blocked, there will be other ways...

12 The Big Picture

I know Denise is there. The family – Sara, David, Jonny, Lalla, Keith – are there. But Pam is not. Sara tells me that David's little ones were playing on Pam's sofa, where she sat. No one liked to stop them but, when Sara came through a bit later, someone had put a case on it. It must be mayhem. Strange to see Pam's cottage world rent asunder. Beautiful day today.

I can't count the times, when reading books or papers, I've come across this man's name.

Ilya Prigogine (1917 – 2003)

is born in Moscow on the eve of the revolution, from which his parents flee
the family settles in Belgium, while Ilya plays piano constantly
reading music before he reads books, till he spies
a volume on the chemical composition of the brain
thinks again and sees where his future lies
'the poet of thermodynamics' receives an endless amount of awards, 53 honorary degrees
the title of Viscount and the Nobel Prize
if Einstein makes energy the boss
Prigogine shows us how it produces order from chaos

Ilya Prigogine is ubiquitous

Paul Marmet begins his paper on relativistic mass
with "let me first express my high regard for the
scientific achievement of late Professor Ilya Prigogine"
the plasma cosmologists refer to him constantly
forming alliances from physics and chemistry to biology
he's central to the new dynamic sciences of the twentieth century

Prigogine lays bare, the ideas which frame hard science, the reductionist view
that "if you know the initial conditions, you know the outcome too"
and secondly "that the complexity we see
can be reduced to simplicity"
these precepts only hold true, if it can be seen
"that the world acts as a machine"
– something the world is now seen not to do

He quotes Sir James Lighthill's apology
on behalf of the International Union of Theoretical and Applied Mechanics
for 3 centuries of promoting
the idea that Newtonian systems are deterministic
"that is quite something"
to apologise for century after century
of "what was really the central point of scientific philosophy"

Having dismissed reductionistic, deterministic, mechanistic schtick
he pursues 'time's arrow' and explores its magic
scientists don't know why time moves forward, why days follow days
they may as well go backwards, the equations work both ways
to Prigogine this makes no sense
"it seemed that the triumph of science was that it had eliminated time
and I just could not believe in that because after all
time is really our main existential experience"

He dismisses the "nostalgia for a timeless universe" to which science adheres
"Hawking says we have to replace real time by imaginary time
what does it mean? – it means that in some way time appears
through this breaking of the geometrical symmetry
at the beginning of the universe, as a kind of fluctuation
it is a strange thing to have this fluctuation going on for 15 billion years

"The other thing is that by trying to eliminate time, how to understand evolution?
how to understand our own human evolution?"
the only solution to this scientific mess
is to ask 'does time move forward'
"is irreversibility a fundamental property of nature? – yes"

Physics defines repetition as wisdom, whereas "life is in evolutionary forces"
physics deals only with deterministic system, while life explores 'nonlinear' creative courses
if physics will not entertain life's journey then, to be sure
as Jacques Monod said "man is an outcast of nature"
"now I think this is basically not so, on the contrary
if you understand that the laws of nature have this nonlinearity, this creativity
then humanity and all of life reflects
some of nature's basic aspects"

"In this universe we see many unexpected things
the best analogy would be a work of art
if you take a piece of music, say some work of Bach
there are very strict rules at its heart
but at the same time there's always something unpredictable
even if you have heard the elements of the melody of the fugue
you are not expecting each modulation
there's always something new coming in", so it is with the cosmos
"there are laws but there is instability, bifurcation
irreversibility of time is the mechanism that brings order out of chaos"
producing innovation
Prigogine is describing the process of creation

“My role as a physicist is not to invent the universe but to describe it
and this universe, which we describe now”, with time flowing
is more what we see around, more knowing
“science should not lead to alienation” but should be showing
“our embedding in nature and that is, I think, the direction in which it is going”

Keith calls. He’s been trying to get hold of me. He wants us to perform three songs from Pasionaria at Pam’s funeral on Saturday. I know that Denise and I can’t meet till the day (she’s doing an episode of Midsomer Murders). Finding the recordings, making keyboard arrangements, learning them. Just three days and no chance to rehearse, it seems impossible, even as I’m saying yes, of course.

The thing is not to be emotional, not as I hear those old recordings, not as I fumble through, working out chords, developing rhythms, topline and basslines. I’ll have to learn to play them without looking, so I can keep contact with Denise. It’ll have to be automatic, to withstand the moment. I wrote these songs one night, when Pam said she needed a demo.

Later on we’re sat across that big kitchen table in the Isle of Wight, working out how to frame the life of La Pasionaria, Republican leader of the Spanish Civil War, so it can be played by a young actress. Pam gave Denise her break in that play.

Then there’s Newcastle in the snow in the middle of the miners’ strike. Rushing into the foyer where they’ve set up a video message from Pasionaria herself. Pam and I coming out of a hotel room, in which we’ve been giving Denise notes and Pam, with a twinkle in her eye, saying of Denise, there’s nothing as sexy as talent, is there. No, don’t start remembering, stop playing for a while.

The reason Prigogine is confident of the direction in which science is going
and that the reductionist view has “been proved to have its limits”
is not simply due to his own contribution, however great that may be
here’s a list of some ‘non-reductive’ disciplines which have evolved in the last century

Holism (1926) – Cybernetics (1940s) – Gestalt (1940s) – Self-organisation (1947)
Chaos Theory (1960s) – Synergetics (1975) – Complexity Theory (1990s)
(‘edge of chaos’ 1st used by Norman Packard in 1988)

In “Holism and Evolution”, Jan Smuts’ contribution
he describes “the tendency in nature to form wholes that are greater
than the sum of the parts, through creative evolution”
for the Melanesians of New Caledonia
an isolated individual is totally indeterminate until he can find his role
within his natural and social world, is indistinct and featureless until he’s found it
the individual is defined by the whole
like Carver Mead’s electron, defined by the world around it

Cybernetics looks at regulatory systems
and studies how their circular, causal chains behave
moving from action to sensing, to comparison with desired goal, and again to action...
a forward wave

Gestalt, meaning pattern or form, observes and charts
how the whole is more than the sum of its parts, shedding light
on the way the mind finds patterns and develops insight

In “Synergetics”, Buckminster Fuller looks at systems in transformation
in his 1970 book ‘I Seem To Be a Verb’ he writes of his own situation
“I live on Earth at present and I don't know what I am
I know that I am not a category, I am not a thing, a noun
I seem to be a verb, an evolutionary process
an integral function of the universe”

Way back in the 1890s, Henri Poincaré tries to determine if the solar system is stable
and finds he has to use ‘nonlinear’ equations, which enable him to see
that even the slightest disturbance causes some orbits to act chaotically
even a completely determined system may digress
produce results you couldn't guess, since each part affects each other part
so, although chaos appears to be the opposite of wholeness
Poincaré comes to realize that it lies at the very heart

In studying this hot energetic, ‘far-from-equilibrium’ chaos
Prigogine finds a hidden order behind apparent randomness
far from breaking down, new systems arise
whether crystals or galaxies, they spontaneously self-organise
these self-evolving systems surge
from chaos, they conspire to problem-solve
from turbulent beginnings, vortices and whirlpools in streams emerge
cities grow and stars evolve

This ‘order out of chaos’ fascinates Prigogine
and he develops the notion of ‘dissipative structures’
open systems that exist by exchange of energy
curious creatures that actually take advantage of entropy

To see an example look in the mirror
for you're a process of change, a ‘dissipative structure’
all the cells of which you consist are replaced, while you continue to exist
like the wave-front phenomenon
where the water goes round and round but the wave moves on

In 1961 Edward Lorenz
a meteorologist working on weather prediction
wants to see a particular sequence again
to save paper, he reduces the 6 decimal places to 3
returning an hour later, the sequence has evolved quite differently
surely the result would at least be similar, how could it fail
finally he figures out that the devil's in the detail, so
he asks 'does the flap of a butterfly's wings in Brazil set off a tornado in Texas?'
and this 'butterfly effect' continues to perplex us

'Sensitive dependence on initial conditions'
make accurate prediction impossible and, studying the implications
Lorenz comes up with 3 'non-linear' differential equations
which are only accepted as describing what is real
when it's found that they precisely describe a water wheel
while the results should be random, the chaos clears
when he graphs it and finds that a double spiral always appears

Previously our understanding of 'order' comes in one of two groups
either steady-state or repeating loops
Lorenz presents a new kind of order that makes dynamic sense
spirals that do not repeat, that allow for developments
simply by adding the chaotic factor
this is the Lorenz Attractor

Benoit Mandelbrot is considering the length of a coastal shore
a map will show many bays but miss those that are too small
further magnification will increase the score
but you can never show them all
even walking the edge of this land
misses microscopic bays between grains of sand
zoom in and there are always more

These fractals, described by the Lorenz Attractor and the Mandelbrot Set
whether forked lightning, blood vessels, branching trees
stock market graphs, snowflakes, fjords, crystals or the internet
are worlds within worlds of 'self-similarities'

A system that's too ordered can create nothing new
and nothing can develop in a crazy place
but somewhere between the two
lies the 'edge of chaos', the creative interface

The edge of chaos is where
these dynamic systems set up feedback loops
where 'positive' feedback will perform
like microphone feedback, to whistle up a storm
while 'negative' feedback, like a thermostat
will calm things down, will try to find the norm
so feedback self-regulates each dynamic form
allowing 'dissipative structures'
on the 'edge of chaos' to arise
to feel their way forward
evolve and self-organise

Quantum loop physicist Lee Smolin makes no apology
for having "completely changed my view of cosmology
feed-back and self-organization
are happening in the galaxy
are in fact essential for star formation
a galaxy is a self-organized system
an ecology"

Science author, John Gribben has this to say
"if you had a lifespan of a few billion years
and a vantage point high above the Milky Way"
you would see orbiting stars obey
the simple laws of physics
but the pattern itself would resist them
"flying in the face of those laws"
it would continue to hold sway
and watching the spiral arms evolve and grow
you'd know "you were watching a living system"
"our galaxy is alive" he says
in the full biological sense
its evolutionary process invents
"spiral galaxies
that are very efficient
supernova-nurseries"

Wow – science has gone hippy, a living evolving cosmos
less like a big bang, more like a big bong
I seem to have gone from Prigogine's rebuttal of deterministic laws
to a Disney world where all the little stars sing a howdy-doody song
in cosmic harmony of course

All these new dynamic sciences concur
with the wave world of Einstein and Schrödinger
in which nothing is static
not even a law
what they're adding
and it's quite something
is that energy is not automatic
it learns to do more and more
symmetry-breaking, coherence-making
self-similarity-growing, through feedback, self-knowing...
an inherently creative world that doesn't just do what it's done before
and should this be
I must entertain infinity

Denise and I get there early, through an ancient stone entrance to a small quiet chapel. Thing is to set up keyboard, amp and speaker, to get a runthrough before others turn up. We work together quickly. When we're done, there's even time for a fag outside in the sun. Lovely place, nothing posh or clinical, half meadow, half woodland, sparkling light through trees, everything in bloom. Feet treading up the gravel drive as friends arrive. Fran Barber, whom I saw only a couple of weeks ago at Tim Spall's party. When Jonny arrives, I don't recognise his former wife Mila, dressed in the beautiful deep red robes of a Buddhist priest. Jonny tells Fran, I didn't do too well in the bed department, turned her into a nun. The Hurfords arrive, all four. When John Hurford, an artist, was told Pam had died, he said what are we going to do now. As we chat, I notice Pam's brother Mickey and her other brother's son Derry. There's also an old lady in constant tears. Anna Chancellor finds out she went to school with Pam on the bus, both scholarship girls. Pam used to make up secret languages and called her 'Fish'. Suddenly I've an image of the young girl, a ball of energy. Sara, David and their kids all arrive together. Dandy too, having spent the night with them, and Lalla in her wheelchair, pushed by her dad. I can hardly bear to look at Keith's face. Not only mourning his wife but, Denise tells me, he was told yesterday he has cancer of the esophagus.

Music begins. We file in, take our places in the pews of this small cave, coloured light filtering through its stained glass windows. The old vicar, who's roared up in a snazzy red open-top sports car, welcomes us. We'll start with a hymn. I walk to the keyboard, look up at Denise, who nods. After Amazing Grace, we do the songs. When asked if anyone would like to speak, Anna gives a lovely short tribute, David's daughter Lupa says how grandma encouraged her piano playing and Lalla says "Jesus Christ Superstar I'm going to marry him".

As we follow the coffin to the grave, Sara's son, Tom, stays very close to Keith, his right-hand man. Shambling up the gravel track, circling the appointed plot, beside her parents, a pretty spot. And now we're just standing around a hole in the ground, as if a bomb has gone off. In one slow sweep, I catch the faces of her four middleaged children, as if they were suspended a foot above the flames, each in different places in the big chaotic circle, strewn like weeds around the open grave, as the coffin is lowered and flowers strewn. David, whose second name is Herbert, casually tosses in a book, quickly turns and moves away. The White Peacock by D. H. Lawrence, after whom he's named.

13 Quality Time

*“Metaphysics is a restaurant where they give you
a thirty thousand page menu, and no food” Robert Pirsig*

Of words to describe creation or evolution
'experience' seems best
the universe builds on experience
experience is an endless quest

We who die, seek definition
so infinity holds little attraction
yet it's in our numbers system
there's always a higher number or smaller fraction

Endlessness and nothingness
are the two infinities I'm taught
a hundredth of infinity is no less
a hundred noughts are still just nought
these Nth degrees are uncertainties
vanishing points, possibilities
peruse them at your leisure
all they underline
is our inability to define
they are simply without measure

If the universe is 'all'
how can it be big or small
it might look like a bear, or be shapeless, endless
what does it care, the poor thing's friendless
how can it know how far it can go or what is its task, there's no one to ask
its only consolation is that it is creation and maybe if it's clever it can cheat death forever...

So you can't do the sums
the cosmos may amount to nothing or it endlessly becomes
it's the 'question' that's essential
that remaining open, embraces the full potential
as long as the future isn't cut and dried
who knows where it ends
it simply isn't specified
it depends
as Prigogine says
“the main character of any living system is openness”

A man and his son are on a motorcycle ride
across America, how heartwarming – until we find
that the man was once a chemist with a brilliant mind
who became obsessed with a philosophical quest
collapsed and was locked
in the state hospital, electrically shocked
until at last they wiped his past and now on this bike, making tracks
with his son riding pillion, he's getting flashbacks
worse, he's starting to intuit his past quest and to pursue it
full of fear and unknowing yet the place he had the breakdown is exactly where they're going...

The man is Robert Pirsig and his tragic story's true
is he insane or just doing 'what a man's gotta do'
after all, 'no pain no gain' as Prigogine will explain
"we grow in direct proportion to the amount of chaos we can sustain"
and Robert Pirsig is searching for the answer to a mystery
he asks "why should a group of simple stable compounds
struggle for billions of years to organise themselves into a professor of chemistry"

"The Second Law of Thermodynamics states that all energy systems run down
but life runs up", how come it doesn't turn into lesser stuff
"If we leave a chemistry professor out on a rock in the sun long enough
the forces of nature will convert him into simple compounds" he can't refuse
"it's a one-way reaction, no matter what kind of chemistry professor we use
the question is, why does nature reverse this process", Pirsig's trying to elicit
"what on earth causes the inorganic compounds to go the other way, what is it?"

In order to see the primary force that sets the course of life's ascent
(the agent that causes life to foment, if you like, its intent)
he evokes creation through the 'quality' of each moment
he says there's a force which, at every level
including the subatomic, seeks to explore
"to buck any closed system", to experience more
and the test is in the moment where it senses what is best
and these innovations and the sensations that seed them
are "pulling the pattern of life forward
to greater levels of versatility and freedom"

"The force of evolutionary creation", says Pirsig
"is not contained by substance", along its course
"substance is just one kind of static pattern
left behind by the creative force"

In this scenario, symmetries are the waste products of creation
such that when we study systems we're studying what dead things do
maintenance at most, administration
when there's only the spirit passing through

I am 16, studying music, and the laws of harmony I'm taught
are those encapsulated by J S Bach and which I'm to obey
Bach is considered a great improviser in his day, so the thought occurs to me
that Bach would have a laugh if he knew that our laws of harmony
are based upon his spirit soaring, spontaneous outpouring
as when I play it too, I sense his spirit passing through

In our relentless uncertainty, we latch onto what we hope will last
rather than breaking molds, we fix upon any centre that holds, essentially the past
willing law and order as if to throttle chaotic creation as it unfolds
put that genie back in the bottle – frame laws to protect cause and effect
define any repeating system as the ultimate form of absolute wisdom
until clever reasons and rhymes, formulae and paradigms accrue
but it's never the spirit passing through

As William James observes "there must always be
a discrepancy between concepts and reality
because the former are static and discontinuous
while the latter is dynamic and flowing" thus
"the deeper features of reality", essentially its coherence
"are found only in perceptual experience
here alone do we acquaint ourselves with continuity
here alone, with qualities and with freedom" to try something new
we become the spirit passing through

Biologists, Maturana and Varela say cognition and evolution are one and the same
"action informs experience informs action" in an endless game, albeit inspired
"the meaning is the experience, no retaining mechanism is required", nothing clever
since the one becomes the other
"mind and world arise together"

I perceive one clear quality in the nature of all experience
it happens in the moment, it's the moment that makes sense
that decides what to forbid and what to allow
things will happen in the future
things happened in the past
but actual experience
happens only now

The present moment is where the two infinities coalesce
now has no duration, it is nothing
while its possibilities are infinite, boundless
it has no constitution
simply problem and solution
'now' is the crucible of evolution

Since the funeral, it's all I can do to keep the treadmill turning. Den and I talk by phone, students come and go. Hard to keep shape-shifting. But tonight is a swansong For Dad, his book launch. Friends and colleagues are coming from abroad, from all over. Richard and I have chatted on the phone, to make sure to support our parents tonight. Richard thinks Dad has become less clear-minded and worries he may not be able to perform. Recently, Mum and Dad have been turfing things out. They need less things, it's life that matters and tonight is quality time. I want to get shot of this chapter today but the time to get ready is just a few hours away.

Nothing will come of nothing
says Shakespeare and I quite agree
all the creation we see is transformation
with a tendency toward complexity
to Pirsig's "greater levels of versatility"
– it can do more than it could before

We're not prevented from learning things
we don't have to sit about wondering why
the universe is an open book
who'd have thought we'd learn to fly

A foetus seems to go
through the evolutionary process
of the creature it will become
each of us, in fact all life on Earth
experiences this prior to birth

And a similar process occurs in the universe
by binary fission, splitting in two
and by reconnection, where the two come together
to make something new
so energy splits into negative electrons
and positive protons
which engage as atoms
and so on, in a journey to ever subtler forms
that can do more than they could before

'Now' is always crucial
no other time ever exists
it's the cutting edge of creation
(all other 'times' are an intellectual extrapolation)
now is always a problem to solve, a novel situation
requiring a response, sometimes even innovation
so, from problem-solving to evolving

The tension of the moment is the natural open state in which we live
where energy isn't just its own medium, it's its own imperative
the concept of identity is a human paradox
if I try to apply empathy to an atom, my mind simply locks
does an electron face problems, does it have an inner voice
or does it simply adapt, perhaps I too have no choice

As one of a generation of hippy fools
who thought we could just change all the rules
it's taken decades of peeling away my vanity to learn
that whatever small improvement I can make, I have to earn
and yet we never stop trying, it's something in our wiring
and that's the quality of energy I find most inspiring

We've the energy, so we do, it's not just that we endure
we don't settle for less, even under duress, we are restless to explore
and as electromagnetic processes in an electromagnetic universe, I'm sure
it's not wrong to see ourselves as the world in miniature
we're in the driving seat, us and all the rest
as the present moment puts us to the test
we can do more than we could before
who knows what new trick the universe may have in store
neither predestined nor automatic, preordained or autocratic
it can't be calculated, the future is not given
it's open-ended, as yet uncreated
it must be forged in the moment, somehow
as circumstances allow
this is creation now

Arriving at the venue, the books have not arrived. Margaret is deeply anxious. Karen is trying to talk her down. Eric is listening to his publisher's assistant, who tells him that the books are, at this moment, in a cab on their way across London. There will be three kinds, a hardback special edition, a softback special edition and a simple text for just £5. But are these the proper books? They've been printed especially for this occasion. I don't understand what the problem is, but Dad

is unassuaged. He asks to speak to his publisher and is handed a phone. Richard tells me there are all sorts of guests arriving and to mingle. He'll support Dad.

I meet and greet. Gerhardt (a teacher at the school in Vienna which Dad had to leave when Hitler marched in) is here with his wife. A lovely man with smiling eyes and a ponytail. Peter Pirke, the editor of Eric's Austrian memoir, is also here with his wife. Each time I glance over at Dad, he seems more agitated and confused. Karen has guided Margaret to a restaurant on the floor above for something to eat. Sam rushes over to me. He's worried for his granddad, who doesn't understand about the books and is winding himself up. People keep trying to explain and the more they do, the more confused he gets. Sam understands, he says, but I hurry over. As I approach the stage, Dad is seated again. Richard, kneeling beside him, is purring. Never mind, he says, what matters now is the event. Have you got your notes? Dad has got his notes and, as he pulls them from his pocket, the milling crowd parts like the Red Sea. The books have arrived.

Dad's publisher taps the microphone, welcomes the audience and explains. Due to an unforeseen problem concerning the ISBN number, printing of the actual commercial run has been delayed. However, we have here tonight, three special editions. The publisher is sweet-natured and eager to please but he can't stop talking. He regales us with prices and then repeats them. He explains all the various ways to order the actual editions when, within two weeks, they're printed. If ordered online, they'll be this price, if ordered tonight, using the order forms, blah blah blah. Several times we try to applaud, by way of conclusion but there's always some other point he's forgotten to make.

Eric, however, is smiling benignly and the moment he takes over, we know we're in good hands. He's funny, usually at his own expense. Waves of laughter pass through me, rolling back down the aisles and, glancing round, I notice Denise, tiptoeing in. She's made it. I can hardly wait to wrap my arms around her once more. Guest speakers rise to tell us about Eric, his boyhood in Vienna, his work for British Special Forces in the war. An MP and a Lord speak warmly of Eric and Margaret's work in the community. And so on. I've been in a volatile state since Pam, so watching Dad perform, so quick and bright, is overwhelming. As we rise, Denise finds me and we hug. As we hug, I notice a man walking slowly down the center aisle and I dissolve. It's Keith. We run to embrace him. I wanted to come, he says. Great man your dad.

Random weaves its own fine fabric
with its own intuitive dynamic
no rest no mass but travelling light
just steps on the gas and it's out of sight
no need to reflect, debate or dissect
it lays the next trick, plays the next lick
and improvises its music

So chaos gives birth to coherence
no other ingredient lurks
nonsense simply makes sense
because only what works
works

Takes a whole lot of running just to stay where you are
but this is the moment and you are the star
it's a soap opera, dirty violent rude
an affair a standoff a scandal a feud
of infinite detail and infinite magnitude

All-singing all-dancing all trilling their song
all making it up as they roll along
all bending the rules, giving truth a spin
doing their best for kith and kin
selfish and ruthless and mucking in
stacking the cards, loading the dice
smiling so everyone thinks they're nice
fighting their way to paradise
no space for timewasters
no time for jerks
cos only what works
works

Sitting out on the first floor deck, another clear night, Denise sound asleep in the room behind me, I'm looking at the heavens, star-gazing, trying to see them as a living system, an evolving organism. I used to think of them as discrete lighting, convenient for nighttime. Now, just looking, they draw me in. I could become their servant.

Here I am at the end of this first part
I came into it to learn how science sees reality from its Big Bang start
expecting to proceed by the appliance of science
the empirical rather than the miracle
and resulting in a reasoned, scientific scheme
what I feel is, I've been hurled
to the opposite extreme
over the borders and into a spiritual world
where a living universe, its restless energy gaining insight, making sense
seems more like a university of light evolving by experience
where young Einstein's dream racing a sunbeam till space and time are gone
seems like the effervescent present, mystics describe in meditation
where life quivers, where now moves ceaselessly on
it seems ridiculous
but are these scientists, however prestigious
turning me religious

*"When one person suffers from a delusion, it is called insanity
when many people suffer from a delusion it is called a religion" Robert Pirsig*

Part Two

1 A Star Is Born

There was a time in early spring when we wondered who'd go first, Den's mum Stella or, as it turned out, Pam. Some days ago, Denise cancelled a job, hitched up her little caravan and went to look after her mother. She perched the caravan at a beautiful place by the sea on Hayling Island, in order to sometimes get some distance from what is going on at the house. It's hard to watch your mother die. Hard to watch your father trying to deal with it.

When I began these 'dear diary' bits, it was only to log what was happening while I wrote the main stuff. Perhaps also to come at things from another perspective, the personal angle. I tend to use life as an escape from work. For the past month or more, it's been the other way around. I can't wait to get down to the shed and focus, in this case on the birth of the Solar System.

Last time I studied star birth, it was the conventional 'gravity model', having not come across the 'electromagnetic model' presented by plasma cosmology. Now it's a steep learning curve to understand how electricity behaves. I remember in my youth people saying we don't understand electricity. It's hard to realise how recent it all is. A century ago most households didn't have electricity. Plasma cosmologists aren't saying they know all the answers. But what they do say, is at least a response to what is actually observed and, with the boom in electronics and ever more powerful telescopes, new information comes in daily.

In the late 19th century
stuff they called 'ether' was imagined to permeate space
the logic went like this
we watch water carry energy as waves
a wire will carry electricity from place to place
wherever we look, energy is transmitted through something material
the Sun gives off energy, so how does it get here
it must pass through stuff, however ethereal
is there water up there, or a cable – there's neither
well there must be a cosmic medium
let's call it ether

And this thinking is based upon the belief
that energy is a property of mass
thus the Sun, a physical body
conveys energy to us through some invisible gas

Einstein gives energy its freedom
he blows the ether away
energy, he says, needs no medium
which entirely changes the state of play
with only its own laws to keep
it's king of the jungle, top of the heap

Streams of plasma are now observed to flow
between galaxies and we know
that these hot streams are able
to conduct electromagnetic power better than any cable

Just as parallel wires, carrying current in the same direction
are drawn together in a clinch
plasma acts like many such wires
pulled together in a 'Z-pinch'

One type, a Birkeland current produces a helical pinch
that spirals like twisted or braided rope
we can now even see a double helix galaxy
through a terrestrial microscope

Plasma also sets up its own boundary sheath, a shield
which separates it from the electric field and which carries an 'excited' load
a 'double layer' of separated charge which acts as its defense
as Alfvén says "all these double layers carry electric currents
...and some of these may explode"

The European Space Agency's infrared telescope
looking within the womb-like shrouds of molecular clouds
can now see "an incredible network of filaments"
stretching for tens of lightyears across eternity
and where they are most intense
"a chain of near-simultaneous star-formation events
glittering like strings of pearls deep in our Galaxy"

These "tortuous paths of cloud-to-cloud lightning bolts" that kick up a storm
are where stars form in 'Z-pinch' as 'plasmoids', plasma-beads that whisk
up a spinning disk, that swirl in a whirlpool
where energy is drawn to the plasma ball
including the one we call our Sun
while outer regions cool
and where plasma beads into atoms
which collide and cluster to form colonies
miniature plasmoids from molecules to asteroids

Denise calls and in minutes I'm on my bike, motoring along the A27 in the dark to Hayling, where Stella has had a fall. She tried to go to the loo, forgot her zimmerframe and fell very badly. She hit her head but her leg is probably broken. The ambulance arrived. They'd take her to hospital, but the hospital won't treat her, as she's already on palliative care. She may as well be

cared for at home. That's what Don and Denise have decided and, by the time I get to them, Denise has managed to procure extreme painkillers from a local chemist.

I arrive in a house where time has stopped, even the ticking clock won't nudge it forward. Don and Den are rational, working things out moment by moment. Someone must be beside Stella at all times, must move her when she gets wet, despite her screams must clean her, talk to her when she wakes, reassure her, administer drugs. When not required, I sit quietly and work.

As the Sun's electric charms
hold its babes in its whirling arms, currents flowing
solar winds blowing through the heliosphere
sweep the space clear leaving a hundred babes
hugging and tugging at each other's orbits
competing fusing losing winning
all spinning around our Sun, one more stunning
transmitting station up and running
such is our beginning

We are in an outer spiral arm of the 'Milky Way'
a galaxy of some 200-billion plasma spheres
and we orbit our galaxy once every 250-million years

Our Solar System was born just over 4½-billion years ago
a star and 8 planets that whisk
in almost-circular orbits, within an almost-flat disc

Four terrestrial planets emerge
orbiting closest to the Sun, made of metal and rock
and encircled by a belt to which asteroids
including dwarf planet Ceres, flock
four gas giants form further out
past the frost line, beyond the asteroid rim
themselves bounded by an icy resonance, the Kuiper Belt
within which dwarf planets Pluto, Eris, Haumea & Makemake swim
beyond this, the icy dwarf planet Sedna alone appears
to orbit its Sun once every 11,400 years

Having been on hand for months, Don and Stella's eldest daughter, Carol has been at a wedding in the U.S. for the past week. She'll be back Sunday. Can Stella hold out? Carol's friends arrive to help. They take stints day and night.

The kitchen fills up with food they bring. Cakes and crumbles, cheese, biscuits, quiches, quick foods. People congregate in the kitchen, planning and replanning, as things change, who'll do what, when. Everyone's cheerful, eyes full of feeling. The lounge is where people reflect and gently cheer each other up.

Don has to move into the spare room, presently packed with furniture, everything that's had to be got out of the way, as Stella's condition developed. Now it has to be sorted, shifted. Everything off the little bed so Don can sleep. Their bedroom has also to be cleared, dressers and dressing tables out, space around the double bed in which Stella lies alone, space for when we have to move her. Somewhere for someone to sit beside her in the night, a comfortable chair, there. Men carry the heavy stuff, women make sense of every surface, help, guide. There's no leader, yet it is performed like a ballet, in a way Stella's in charge.

Time to move her. Get your hands in under there. She'll scream but we'll be as quick as we can. Soon as she's up, get the new lining in, then it's over and down, are you ready? She does scream. The duvet flips back. I see her body, skin and bone. Then it's over and down, time to comfort her, time to clear the places we messed up clearing the other places, time for a drink, grab a snack.

I'm sitting beside Stella in the early hours. She's awake. Hello Paul, she says, are you alright? Then she cries out in pain, clutching her right leg. I'm sorry, I say. Not your fault, she says. Sometime during our chat, I realise her dementia has gone. She's clear as a bell.

Sam and Dandy arrive for the day. Dandy sits with her grandmother for hours, combing her hair. Sam gets us all food and then sits with Stella. I take to playing old songs on the piano, as she says she likes it, songs by Hoagy Carmichael, the Gershwins, Cole Porter and Irving Berlin.

In the evening I chat with Don, who says "even now I can't believe this is happening". Myself, I've never experienced anything like this. I watched my granddad die in hospital but Stella is dying at home, surrounded by her family and friends. For all the work and all the feelings underneath, it's a party. If there is such a thing as a beautiful death, this is it.

Mercury, a dense heavily-cratered world, is small
and, irradiated by the Sun
it's not much fun at all

On Venus the joint is jumping
in a shroud of sulphuric acid cloud
with no magnetic field to protect it
volcanoes just keep pumping

Whereas Earth, our 'goldilocks', is alive and alert
Mars is too far out to thrive
and, peppered with vast extinct volcanoes
has become inert

Jupiter is 2½ times the mass
of all the others put together
a creature of hydrogen and helium
where powerful weather systems form
the 'Great Red Spot', an endless giant storm
while it's vast magnetic fields drive
63 moons, 4 of which are geologically alive

Wind speeds on Saturn can reach 1,800 kilometres per hour
its mantle and core yield a magnetic field
which maintains and protects its power
its rings are a stock of small ice grains and rock
two of its moons are active and Titan, it would appear
is larger than Mercury and, uniquely, has an atmosphere

Uranus it seems has no pride
for it circles the Sun on its side
at -220°C, it seems to spend its days
producing a blue ammonia glaze

Neptune, smaller but denser, radiates more internal heat
it's laced by icy blue methane clouds that whip about looking sweet
while its largest moon, Triton, is enough to frighten
flying backward, spouting geysers of liquid nitrogen, no mean feat
as well as Neptune's 13 moons, it has a number of larger fans
marching with it, in 1:1 resonance, these are Neptune's Trojans

I'm not sure if any of that makes sense, adds up to anything. The kitchen looks wasted. Everyone's cleared up, but there's something ad hoc, as if a hurricane swept through and left everything perfectly in neat tidy piles in hundreds of unusual places.

I'm learning something from Stella, watching her, courage and love personified. Kneeling beside her, Sunday afternoon, I tell her. She raises an arm, we embrace. A tear forms in her eye so, although we don't mention death, she knows. Is that Carol? she asks. I hear Don and Den in the dining room. It's Don and Denise, I say. I think they're talking about you. Best not to listen then, says Stella, as I hear another voice. It is Carol.

Carol takes my place and I wander out into the warm sunny garden for a cigarette. Nothing but sunshine this whole damn spring. Checking my mobile, there are loads of missed calls from my brother. Richard never calls. I panic. The first voice message reminds me that I'm supposed to take my parents to a reunion of my mother's family. Shit. The second is silent. The third says it's okay, he'll do it. The last says not to worry, he knows what's happening my end, he's taking them. I phone him. He's at the reunion. Too noisy his end to chat. But all is well. Thanks Richard.

Inside, Carol's family are taking it in turns to go in to Grandma. Eyes are wet. I realise I'm no longer needed. Denise and I hug. I'm back on my bike. At home I dive into work.

From the Sun's south pole I can visualise
the Sun turning, planets orbiting, each spinning clockwise...
while most of the 139 moons are in synchronous movement
with one face permanently turned toward their parent
the closer to the Sun, the quicker a body flits
the further out, the greater the distance between orbits

Resonance forms a rainbow

Pluto orbits twice for every three of Neptune's
a ratio of 1:2:4 separates Ganymede, Europa and Io
(three of Jupiter's moons)
while near-resonances thrive
Earth and Venus are almost 8:13, Jupiter-Saturn, close to 2:5

And then there's chaos, Uranus rotating on its side
Venus spinning backwards and other small creatures along for the ride
comets and centaurs, flipping off major planetary forces
creating chaotic pinball courses

A mix of order and chaos
room for manoeuvre, problems to solve
stable enough to sustain yet chaotic enough to evolve

The burning ball we call the Sun shines bright
beaming out electromagnetic light
stars hotter than the Sun are rare
and nuclear fusion theorists declare
that early in its history it was fusing hydrogen, which is lighter
now 30% hotter, it is fusing helium and growing brighter

Along with light, a continuous stream of charged particles appear
flowing out from the Sun, creating a bubble, the heliosphere
known as the Solar Wind, this plasma sweeps through the cosmic terrain
envelops the entire disc and shields the Sun's domain
while sunspots and solar flares may whip up a cosmic storm
the Sun's rotating magnetic fields twist the whole thing into spiral form
the 'heliospheric current sheet' like a twirling skirt or a spinning spool
is an electromagnetic whirlpool

NASA spacecraft IBEX has discovered a 'ribbon'
of highly energetic particles at the boundary of our solar system
"this zone is where electrically charged particles flowing from the sun
pass far beyond the planets" and these filaments act as one
forming a giant circuit in the sky which, according to plasma cosmology
connects us with the electrical supply of the wider galaxy

Although I'm here, giving lessons and working, my heart is there. Denise tells me that she and her Mum have recited the Lord's prayer. Don isn't religious but it's the right thing, isn't it. Yes, I say. There's to be no more moving Stella, says Don. It's too painful for her. Let her lie wet. Doesn't matter now. No more nurses, just quiet and love. Very difficult all this.

Whenever I get a call, I'll do whatever I'm asked. In the last weeks, it's been hard to pay bills on time, to sort lessons, answer enquiries. I've got way behind, made umpteen mistakes. I've also been confused between the 'gravity' and 'energy' takes on scientific wisdom. It's like going over to the metric system.

Everything should be seen from a single, unified perspective, so now it's all going electromagnetic. But what causes materials to pond, heaviest to the centre, if not nuclear fusion? which the plasmoids deny. Everything seems to have a nucleus, perhaps it's spin that compresses within. Certainly I'm not laughing at the ether brigade anymore.

These plasma rivers, I realise
are the cables in the skies
where plasma is the wiring
where energy does the hiring and firing
and if stars are powered from a galactic circuit, then of course
we're looking at "the most powerful organizing electric force"
a single system actively aspiring

Everywhere the connections are with biology
whether the double helix of a galaxy or a Birkland current
star 'birth' itself or a plasma's 'double layer' boundary
which Alfvén describes as a 'cell wall' equivalent
"by which a plasma protects itself from the environment"
and all of this may be more than metaphor or analogy
why should biological life be so very different
why should it be some special trick
why not the 'body electric'

Closer to home I guess
we know more and more about less and less
but in worlds within worlds of self-similarity
where the one may stand for the many
each fractal scale may offer insight
thought processes themselves may shed light
in a world which can only be experienced subjectively
electric thoughts may beam out and connect us with the wider galaxy
or maybe I'm spaced-out with all this plasmoidal starbirth
and I'd better get down to Earth

I'm going to have learn how it's born, how its energy is drawn. May have to use a combination of 'gravity' and 'e-m' models. Either way, energy organises. If something contains useable energy, it organises against entropy, fires up, takes its life in its hands. That's, self-evidently, what Earth does, as the Solar System forms.

Wednesday, 22nd June, Stella died at about 3 this afternoon.

2 Earth Birth

Tonight, Sam and Dandy will drive to Hayling where Don and Smilah are. Denise will take the train down from London. I can't sleep in Stella's bed again. I can't even think. Just work.

Earth is born hot
it grows from its birth
some 4.6 billion years ago^(BYA)
by colliding and engulfing
for a hundred million years or so

As each of these foreign bodies enter
young Earth remelts and then resettles
while spinning on its axis will draw
the heaviest metals to the centre
till iron, nickel and other dense
unstable elements form a core

The core supports
layer upon layer of silicates
olivine, feldspar, mica and quartz which insulates
while, beyond this mantle, a burning scum
where even lighter creatures flock
calcium, sodium and potassium
form a churning sea of melted rock
as each element finds its place
between Earth's centre and its surface

These processes
of capturing every planetesimal that menaces
of melting down and differentiating out
into lighter upon lighter layers about
a core, hot as the face of the Sun
constitute once they've begun
Earth's morphogenesis
phase one

One late massive collision
ejects a disk that forms the Moon
that turns in perfect synchronisation
as a gyroscope and Earth's good fortune
since its creation steadies the planet's rotation

Earth's layering into sections
isn't just to look neat and pretty
not so it'll pass inspections
or divide hell from heaven via purgatory
but an evolving matrix of protections and connections
an innate dynamic circuitry

Its core, a solid sphere in endless motion
spinning just faster than earth
within an incandescent nuclear ocean
creating one massive revolving magnet
which the silicate mantle has sealed
generating an electric bubble
a vast bipolar field
keeping Earth out of trouble
Earth's electromagnetic shield
projects tens of thousands of kilometres into space
deflects the otherwise fatal solar wind
which, racing out from its solar base
stretches our 'magnetosphere'
like a comet's tail on its midnight face

At 60 miles or more above the geosphere
plasmas perform their swirling ballet
dancing in each magnetic ray
trapping or steering charged particles away
as shimmering polar auroras display

In 1973, a magnetometer aboard US Naval satellite, Triad
detects two sheets of electric current, previously unknown
down on the morning, up on the evening side of the auroral zone
each sheet carrying a store of a million amps or more

We say the magnetosphere keeps the solar wind at bay
which itself protects the solar system as distinct
from forces at work in the Milky Way
it may however be clearer to say
they are all harmonically linked

Dandy is back from her first year studying costume at Wimbledon. She loves the course. It's what she's always wanted to do. That's the trick, knowing what you want, but you can't fake it. Funny how some folk seem to be so clearly directed from within. I'm watching my kids, playing with the dog inside the house. I could so easily just phase out, but then where would I be?

The mantle defines the core
without it, it wouldn't work no more
silicates that surround the molten orb
insulate Earth's energy store, absorb
the relentless shock, soak up its heat
send columns of warm solid rock that rise
up through the mantle to meet
the starry skies, where these plumes
coming face to face with freezing space
blossom into magma blooms
each magma petal cooling, dividing
flowing ever slower, riding just below the surface
till the cold takes hold of them and they sink back down again towards the core
waiting to be heated up once more

Like a thermostat, these convection currents
pulsing through the mantle in heartbeat rhythm
are the pathways of Earth's metabolism
regulating heat as they wheel about
channeling waves of electromagnetism
throughout the evolving organism

At first Earth is one great gaping wound
energy escaping from its core
bleeding from every pore yet, as it charts its orbit
so it catches the cold, starts to absorb it
at the interface with freezing space
where red hot slabs appear like rafts upon the magma ocean
easily swallowed, sucked back into the fry
in tidal motion as the Moon, still very close, sweeps by

But the process won't abate
and these cratons accumulate
heavier cratons sliding beneath lighter
colliding in the roiling ooze
locking tighter till they begin
to fuse, producing Earth's first skin

By 4.3^{BYA}, a solid crust has formed, albeit thin
that flows above the mantle, that streams
across the surface, an ever-renewing skin
fed by eruptions at its seams

Eruptions which spew up masses
of halogens, ammonia, hydrogen
carbon dioxide, methane and other gasses
which may go to waste, escape into space
unless they can somehow be held in place

Oxygen is volatile, when it's on the loose
should it encounter hydrogen
it only takes a spark for them to produce
a fabulous daughter
and the electric surface of Earth
is the perfect place
for them to embrace
to fuse and give birth
to water

Between Earth and its plasma shroud
lightning flashes, thunder roars
in the heat of each blast
skies overcast
building up vast water stores
in banks of cloud
a vapour sheath
trapping a heavy primordial atmosphere
pumping up beneath
as heat and pressure cause
water to condense into rain and it pours

Storms on an unimaginable scale prevail
till all free oxygen is gone
falling at first on incandescent rock, water evaporates
but as temperatures adjust
this driving deluge creates an ocean that covers the crust
with clouds in the heavens curled
about a water world

Earth's hadean ocean
is a hot acidic potion
hot black smokers and warm alkaline vents
cool the magma lens
where water chemistry forms a dense
sodium-chlorine brine, reducing acidity
as the ancient ocean cools towards clemency

Within Earth's electromagnetic weather
all its systems support each other, evolve together
self-organise to pursue
and realise Earth's morphogenesis phase two

Where a core that forms
a magnetic field
in which violent storms
produce clouds that yield
an ocean that glides
on a crust that rides
on a mantle in which is sealed
the core that forms
the magnetic field

While between the two extremes of energy
between the burning Sun and Earth's own store
deep beneath the glittering sea
a rich salty soup builds up on the ocean floor

Life can't get started on the surface
where ultraviolet rays will fry
any critter who dares to try
before it gets any notion of promotion
life can only begin to form
within Earth's warm protective ocean

It's impossible to overstate
biology's early success rate
the tiny creatures that began it
transform the planet
oxygen in the atmosphere and ozone layer
screens out nearly all the harmful radiation
making it fit for habitation
and there's no free oxygen in the air
until biological life puts it there

There is also the curious anomaly
known as the 'faint young Sun paradox'
While working on NASA's Mars mission (c. 1960-70)
James Lovelock has the temerity to state
that the biosphere may regulate its own climate

Considering this idea of Lovelock's
Carl Sagan remembers the paradox
over the almost 4-billion years of Earth's biosphere
the Sun has heated up nearly 30 percent
while Earth's surface temperature has remained constant
perhaps life solves this paradox
we know Earth is a 'goldilocks'
containing all life's building blocks

Yet no scientist dare suggest
that Earth produces biological life to serve its own self-interest
although it's pretty clear
that the planet produces a magnetosphere
that deflects the solar wind and stops it being hit
and a mantle that protects the core more than a bit
it also produces the biosphere
and the biosphere also protects it

Williams and da Silva, in 'The Chemistry of Evolution'
observe that the core heats the surface
which is also open to the Sun which radiates
together they force the whole surface chemical system
into evolving energised steady states

"There is an inevitability about this, probably including life" they say
and again, reading between the lines (caps are mine):
"a chemical system, EARTH, exposed to solar energy
able to use or enclose space in an organised manner
WILL PRODUCE novel chemicals
and eventually ORGANISMS made of different chemotypes
starting with prokaryote species"
so they get to their underlying thesis eventually
Earth will produce life – inevitably
enter morphogenesis, phase three...

On the motorbike in just sandals and short-sleeve jacket, waves of warm air as I weave between commuters along the coast, telling myself to hold tight, just look after Denise, look after Don, be nice to everyone. But really I'm a leaf in the breeze and, crossing Hayling Bridge, a wailing ambulance overtakes and I follow it. The nearer we get, the more alarmed I am. Don's had a fall or someone's collapsed. When it finally turns off, I slow right down and concentrate on breathing.

Everyone's up having coffee. A besuited Don sits writing at the dining table and doesn't notice me. Carol and her family arrive. The hearse arrives. Stella is in a casket with flowers. We gather round. Duncan gathers his lot and follows the hearse. I follow him. I can't see Denise, who's

driving Sam, Dandy and Don. But an older couple wizz up on a bike beside me, pointing in alarm at my bike. What's wrong? Perhaps my indicator's on. No. Their indicator's on. They must be turning right. They're not. Then I realise it's next door neighbour George and wife. Where's Denise?

We follow the hearse off Hayling, through Havant and along old roads that crest the Downs. Duncan indicates and pulls over. What's up? I ask. We're going to let Denise pass, he says. I too hover. Suddenly George and his wife zip by and follow the hearse, so when Denise passes with Don, they've to follow George. Never mind.

The crematorium is vast. Six chapels. Parties of mourners waiting outside each, others inside, other groups out the back admiring the wreaths. My lovely brother Richard is there with Joe. No sooner have we said hello, than I'm whisked away to an organ I can't play. How do I make it make sounds? No one knows.

I pull out some stops. It works but I've to hold my feet up, not to play bass notes. Our lot shuffle in and wait for proceedings to begin. A smiley-faced gay vicar talks about Stella, a Pompey girl, a loving mother, the perfect naval wife, making food below deck in all weathers while the men wrestle the elements.

I plough too slowly through Amazing Grace, holding my feet up. Natalie reads a poem she's written, full of humour, like "I don't know how she saw through all the cabbage in her glasses". Laughter and tears. Duncan has spoken. The vicar has read the poem composed for the Queen Mum and I'm accompanying 'Bring Me Sunshine'.

A man in black with a top hat moves down the aisle in a formal manner, step by step, doffing topper to the tune of "Right Said Fred" and we're led out the back to admire bouquets which say "to Gramps" or "Beloved Dad" as, behind us, the next service begins.

On bike, I follow Sam to Carol and Duncan's and a gathering in the garden. It's warm and sunny. There's food and drink. Later, when Richard and Joe have left, I make the rounds, saying goodbye. Although my eyes are open and I seem awake, my mind won't focus and it's all I can do to drive home safely. Strange state, like blotting paper, no feelings, just tired.

Midnight and I'm awake again, can't sleep, can't work.

You move from world to world
another phase of the moon
another conjugation of the stars
as each moment swallows you whole
and spits you out into the next
so a life will pass
and you can string these moments together
to tell a fine tale and call it art
or they can sit there glowing
in the treasure chest of your heart
but the moment they're gone
they're gone
and you're just moving on
goodbye Stella
God bless Don

3 Looking for Luca

Luca

is our 'Last Universal Common Ancestor'
the first life on Earth, whom we've been looking for
for many a long year and we've never been anywhere near
but I'd no idea of the extent and success of research that's suddenly to hand
so I have to admit that I'm wildly excited now, as I start to understand

In 1953, Stanley Miller and Harold Urey perform the task
of condensing primordial elements into a flask, while electrically igniting
"sparked, as the primitive atmosphere was, by early lightning"

"In only a few hours" says Carl Sagan, describing the experiment
"the interior becomes streaked with a strange, brown pigment"
and by this simple means
"a rich collection of complex organic molecules" builds up
"including the building blocks of nucleic acids and proteins"

These building blocks self-assemble
even copy themselves identically
and thrive where these conditions are rife
as Sagan says reverentially
"in this vessel are the notes of the music of life"
so essentially
electromagnetic energy fired into a plasma cloud
produces a stellar nursery
fire electromagnetic energy into a volcanic shroud
and you get biology on Earth
either way, this is birth

But hang on a tick, we know Earth creates life, but do we know how
folk have been asking that question for century upon century
do we suddenly have the answer now
yes, well probably

A living organism
needs 3 things to get about
a skin that separates its inside from its out
food, a feast of energy for its metabolic use
and sex, or at least the ability to reproduce

Reproduction's easiest to deduce
as, way before life starts, it exists
in the form of chemical catalysts
catalytic cycles create their own profusion
and kick-start the chemical phase of evolution

A catalyst increases a reaction rate
without thereby changing its own state
given a suitable energy store
it'll create chain reactions which self-propagate
these catalytic cycles are at the core
of the self-organising chemical systems
which evolve into micro-organisms

An autocatalytic system is remarkably stable
can withstand a good deal of chaos, is able
to reproduce itself, to correct errors
to conserve and transmit complex information
to develop its own administration
i.e. it can evolve, can pass through crises
creating ever more clever devices or, put poshly
characterised by increasing richness of components, structures and diversity

These are chemical forms but they self-replicate, as is evident
with the nucleic acids spontaneously produced in the Miller/Urey experiment

You've got to travel a long way
from a simple autocatalytic process to DNA
the timespan is vast
and microbes reproduce very fast
how many developments would you need
to breed an elephant
in a way it's irrelevant

The point is, it's aspirational, cheats entropy, self-organises
it's Pirsig's 'spirit passing through', it's the universal trick
I can describe the whole cosmos as autocatalytic
it's the process of processes
evolving by problem-solving

And in a way it's all I need to know
but if I'm looking for Luca, there's a long way to go

An autocatalytic process needs to be energised
I breathe in oxygen, I eat food as well
which originates with plants, who've devised
a photosynthetic cell
either way, what I'm after is energy
which takes me to Doctor Peter Mitchell
who in 1978 won the Nobel Prize for chemistry

Life's universal currency
is a molecule called ATP
split it and you get energy
'adenosine triphosphate' powers most
of the energy-demanding processes in its host

Life is profuse
in order to grow and develop you've to produce
more energy than you use to obtain it
but how does life gain it
since the process only creates about $1\frac{1}{2}$ ATP as a rule
and there's no such thing as $\frac{1}{2}$ a molecule
how can cells accrue it
the search is on, in chemistry
for a high-energy intermediate that might do it

Working in his rural Cornwall laboratory
eccentric Peter Mitchell finds a different way to view it
life, he says, is not powered by test-tube chemistry
but by a kind of electricity

Between the outside's positively-charged, acidic environment
and the negatively-charged, alkaline world within
an electrochemical gradient
builds up across the skin
given the chance, protons will flow through
and although the voltage created won't accrue
to one whole molecule of ATP
the process can be repeated endlessly
'chemiosmosis' works like a battery

For twenty years chemists can't agree
this electrical nature seems too strange
and yet, in terms of currency
as Nick Lane says "it allows cells to save loose change"

And it turns out that, in the living world, proton-pumping is ubiquitous
it drives both cell respiration and photosynthesis
it feeds Earth's brood
solar energy is converted into a proton gradient
in much the same way as the energy of food
and while being used to make ATP
proton gradients are often harnessed directly
driving the rotation of the bacterial flagellum, as well
as the active transport of numerous substances in and out of a cell

No matter what evolution has since done
essentially there is only one process that inspires
Mitchell's 'chemiosmosis' fires the metabolisms
of Earth's organisms

All the most primitive lifeforms we know of, generate
ATP from proton current, both archaea and bacteria
have this proton-pumping trait
so it may originate with Luca

But where is Luca's realm
where does this electric metabolism take the helm
especially since, beyond this similarity, there's enough inconsistency to overwhelm

Biochemical pathways vary, some superior some inferior
DNA replication itself evolves independently in archaea and bacteria
but one difference is even greater
their cell walls are entirely unlike and must arrive later
where might the search for Luca begin
it makes no sense, how can an organism survive without a skin

Life can't get started on the surface where the Sun's ultraviolet light
beaming through an atmosphere that life has yet to oxygenate
will fry any creature in its sight
and should life's ingredients originate
somewhere in the cosmic void
courtesy of an asteroid
where might they proliferate

The Miller-Urey experiments
suggest volcanic elements deep within the hadean sea
but we've not been able to get down and look until recently...

The moment it's a possibility
we find a vast volcanic venting system
where Earth replenishes its crust, just like an organism

Back in 1915 Alfred Wegener defines
a theory of 'continental drift' to explain why
continental outlines seem to nuzzle
like a jigsaw puzzle and as years go by
increasing evidence accumulates
that Earth's crust consists of a number of plates
till in the 60s, seismometers, focusing on
nuclear testing, reveal a startling phenomenon
almost all volcanic activity congregates
along belts which mark the edges of tectonic plates
forming a continuous 40-thousand-kilometer series
of mid-ocean ridges along the floors of all Earth's seas

They are rifts, where lava spews up through vents
replenishments which never stop
creating fresh skin, energising their environments
and moving the continents which sit on top

Descending in heat-proof deep-ocean submersibles
we find 'black smokers', belching out lava and more
we find entire ecosystems, including archaea
obtaining their power purely from the planet's store
perhaps they spawn life's first cell
but apparently not, it's far too hot, oh well...

Then, in 2000, a team led by Deborah Kelley
stumble upon another kind of vent field, she names The Lost City
"on a dome-like massif, with steep-sided carbonate chimneys"
these vents are alkaline and relatively cool, as vent fluids go
and support "dense microbial communities" – bingo!

Lab experiments confirm that these alkaline vents
do concentrate nucleotides and nucleic acids
so the idea that first life on Earth was spent
in an ancient alkaline hydrothermal vent
that it gives birth to the very first creature
"looks very plausible" as Nick Lane will comment
"even before you consider the most striking feature"
these chimneys present "a ready-made proton gradient"

“Alkaline fluids bubbling into an acidic ocean
form catalytic mineral cells” as Mike Russell explains
“with a proton gradient across their inorganic membranes
they’re set up in the same peculiar way as all cells today”

For all of life’s rich diversity
there are only 5 ways carbon dioxide
can become a living substance
and only one way comes for free
the straight reaction with hydrogen will dispense
simple organic molecules while releasing energy
and while hydrogen is not usually found
to bubble obligingly out of the ground
it does in alkaline vents

So life’s common ancestor
is formed and fed by natural proton gradients in alkaline vents
and to escape, just one step more is necessary
to store energy, it creates an internal mirror
a reversal of the process
this is Mitchell’s chemiosmosis

But hang on, where are the cell walls, how can this life begin
as I understand it, magma is roaring up as water is pouring in
how can any organism survive, let alone evolve without a skin

And this for me, is the clincher here
looking closer, tiny pores appear
as lava roars up, while water foams
its high chimneys rise as honeycombs
riddled with interconnecting compartments
where proteins reside in the side of the vents
which capture rising energy and each nucleic mineral
until amino acids form a genetic strand
a proton-pumping metabolism and
best of all
a cell wall
as it would seem

Jack Szostak and his team have demonstrated
under these conditions, fatty acids become concentrated
and spontaneously cause
cell-like bubbles to form within the pores

They also say
“that a microcapillary column of thermal diffusions
can concentrate dilute solutions
of nucleotides, oligonucleotides and fatty acids”
all the way
to “the self-assembly of large vesicles
containing encapsulated DNA”

Moreover there’s the indication
that occasional cell-wall separation
followed by the molecules’ re-encapsulation
could allow for genetic recombination
and further to this process of exchange
may provide a means for their migration
increasing the range and distribution
and that such a variable institution
would increase the rate and thus create
“a strong selective pressure for the evolution
of a more stable cellular state”

It’s alive
a hive of breath-taking biology-making
proton-pumping till the joint is jumping
powered by heat, hydrogen and proton gradients
this natural flow reactor fills up with organic elements
creating, duplicating, mutating, cross-pollinating, layer by layer
and finally forsaking, breaking free of this first paradise
as the first living cells - not once but twice
giving rise to both bacteria and archaea

In other words, all the dynamics of the first organism
cell walls, along with genetics and metabolism
foments in warm alkaline vents
deep in the honeycomb
Luca’s home

For me, what’s great
is that these critters recreate
the world that first supplied them
the environment in which their childhood’s spent
their cell walls are shaped by the pores that hide them
the reactions that provide them with nourishment, that guide them
become their own transactions, as they replicate the whole proton-pumping vent inside them

4 Flesh and Blood

We are water babies

born in a cave, curled in a world of fire and brimstone
made in that world, of that world, and by that world alone

It's said that life may arrive from space
carried by asteroids to this earthly place
but all seawater will gush through a hydrothermal process
every hundred-thousand years or less
so any extraterrestrial life that gets fired
into young Earth's water bubble
will flush through the vents, so it makes no sense
its effects would be negligible, not required
and hardly worth the trouble

Between the crackling Earth and its skies
lies the electrolytic sea, in which life comes to be
our childhood is spent
within this rich brew
here, mum is Mother Earth, her womb is the vent
and the amniotic fluids are the mineral-rich waters sluicing through

In a human womb, the fluid at first mainly contains electrolytes
mineral salts like chloride, calcium
magnesium, sodium, potassium
charged positively and negatively
forming a solution that ionizes and conducts electricity
essential to biology
these ionised salts regulate the electric charge on every cell
and the flow of water across its membrane as well

As a human babe gestates
within the fluid, proteins and carbohydrates appear
with lipids, phospholipids and urea
in terms of evolution
this whole scenario
seems to reflect our birthing world of long ago
sea water is an electrolyte solution
electrolytes pour out of hydrothermal vents
followed by increasingly organic components

These rifts spew volcanically-heated sea water
where magma expresses Earth's excesses
where new crust forms, where the ocean warms
and a rich mineral soup coalesces
methane, iron, manganese, sulphur
all the minerals Earth possesses

They form vast mineral chimneys
from the deep cauldron up to the cooler seas
and across this temperature range
you get every conceivable chemical change
hence, as one scientist comments
these vents are living laboratories

Here are the processes
the power and the ingredients
this is where hydrogen from Earth's store
meets carbon dioxide on the ocean floor to dispense
the reduced carbon compounds that are life's essential constituents

As waters percolate down between
newly formed rock beneath marine floors
they react with minerals like olivine to cause
a hydration and metamorphic transformation
called 'serpentinization' which presents
an alkaline fluid that wells
up through the porous cells
of cooler, off-axis alkaline vents

This upwelling hydrothermal fluid, diffusing
into the acidic sea, with its iron-rich stores, couples
producing carbonate rocks riddled with tiny pores
and a foam of iron-sulphur bubbles

Inside the iron-sulphur globules
hydrogen reacts with carbon dioxide to create
simple organic molecules
such as methane, formate and acetate
these iron-sulphur minerals catalyse
some of the reactions that arise
which means that they
remain at the heart of many proteins today

The electrochemical gradients
between alkaline fluid from the vents and the ocean's acidity
cause acetyl phosphate and pyrophosphate to form spontaneously
acting just like ATP, behind the scenes they work away
driving the formation of amino acids – the components of proteins
as well as the creation of nucleotides – the building blocks of RNA
while thermal currents and diffusion guides
the conglomeration of larger molecules, polypeptides and polynucleotides

Fatty molecules coat the iron-sulphur froth
and spontaneously form cell-like bubbles in the broth
some of which may encapsulate a self-replicating resident
these first organic cells percolate and ferment
cooling, warming, dissolving, reforming
as they circulate within the vent

Evolving an enzyme called pyrophosphatase, which becomes a major player
allowing these critters to produce more juice
(this ancient enzyme is still in use in many bacteria and archaea)
while some start using ATP, which in turn will raise
the enzyme ATP-synthase, found in all life nowadays

I could be a problem-solving autocatalytic loop
one of squillions squirming in the fatty gloop
in the pores of these high rocky tors
where magma roars between the plates
and ejaculates into this primordial soup
I could be the series of events evolving every day
into chains of polypeptides and polynucleotides
and thence to RNA, thus
I could be a virus

RNA is primal
retains all the information
all the transitional states between RNA
and the later DNA-based replication
in a virus, the genetic material
is enclosed in a protective protein coat
and sometimes even a lipid ball
in humans viruses promote hysteria
since they can squirm in and out of a cell wall
being a hundredth the size of bacteria

Viruses enter foreign cells, like cuckoos
RNA-carrying sperm do likewise
so RNA probably permeate lipid bubbles in the ooze
cross-pollinating and replicating, pioneers
who endlessly fuse as genetics accrues
for millions of years

Far from being examples of Dawkins' selfish gene
viruses form part of a dynamic genetic symbiosis
with us and them and everything in between
perhaps 40% of the human genome consists
of genetic material imported by viruses
without these pests, we would never have been

Over 3½ billion years ago we'd have seen
viruses and transposable elements
continually coming together, separating
updating, duplicating in these vents
mimicking, translating, making sense
and on the way, two strands of RNA mix
a bonding that knocks all the others for six
a marriage called DNA, a double helix
so it's their turn to go fucking about
as they grow and mushroom out
while those on the margins must learn new tricks

Organisms further from the main vent axis
where the natural electrochemical gradient wanes
start to invent their own gradient
by pumping protons across their membranes

Here, Russell and Martin, who have done
so much of the original research, take the reins
“at this level of base-containing RNA-like polymers
that can act as a template for their own replication
and with a steady supply of ingredients and energy
a dramatic transition takes place
in the nature of the chemistry at the vent
natural selection sets in
with the non-identical self-replicating
contents of different compartments evolving
independently within the mound”

Their highly detailed paper (Royal Society, 2007)
contains the following statement:
“the reader might ask whether we’re suggesting
that this hypothetical hydrothermal vent
is a fountain of chemical youth
that spews up a constant supply
of energy-rich thioesters from scratch
and that the resulting reactants just fall into place
according to the laws of thermodynamics
and that metabolism thus unfolds during that process
– yes, that is what we are suggesting
in thermodynamic terms
organisms are given a free lunch
that they’re paid to eat”

And now the birth of life on Earth’s complete
once these first organisms can generate
their own electrochemical gradients
they’re no longer tied to the vents
with their own metabolic rate
they are now superior
archaea and bacteria

Do they choose to leave home
no they’re kicked out of their lair
washed away to sea to learn motility
little proton pumps creating this facility
by rotating a whip-like hair
that propels them here and there
off the teat but not on easy street
yet each of them contains
an alkaline vent in a miniature sea
pulsing within their lipid membranes
life is salty but sweet

The computing power of the bacterial genome alone is reckoned
to present a rate of new combinations at up to 10^{30} bits per second
(roughly 10^{13} times greater than the current fastest computer)
which would fit in well with the Archaean expansion rate
proposed by David and Alm (2010) who demonstrate
that between 3.3 and 2.7 billion years ago
over ¼ of the gene families we know first
occur in a short evolutionary burst

A word about 'proton-pumping'
and the evolution of the biosphere
what about turning the idea on its head
what about energy being the protagonist here instead

Nature favours minimum pathways
it doesn't like to waste its forces
employing the vibrational and kinetic effects
of its specific temperature and pressure resources
certain reactions that strengthen and develop chemical bonds
will actually decrease the molecule's entropy
proteins, ligands and nucleic acids do this
increase their store, end up with more
useful energy – hard to conceive
but it wants to achieve

Okay, looking at things the traditional way
a certain heat may cause chemical rearrangings
structural alterations, physical transformations
as things change things
or, alternatively you can say
that the energy, the heat, provides just enough
to give rise and to organise change
in the electromagnetic circuits we call stuff

Within a certain range, we can even see superobjectives
such as the biosphere spreading its net
to keep the surface cool, to offset
the increasing heat the Sun gives
in this case, Earth invests its energies
for millions of years to produce these facilities

Energy after all is full of energy
and the things it does make sense
and after all, rocks don't make themselves
the chemical ingredients can hardly be said to conspire
yet the same force that makes stars
also causes biological birth on Earth
and energy does seem to desire
the experience by which it becomes self-taught
to wire every new circuit that'll work it
just a thought

It's Pam's memorial today.

We drive to Putney, where Denise's friend Graham has a gig tonight, then take the tube to Piccadilly. St. James' Church is big and it fills with the lords and ladies of theatreland. The lady vicar describes Pam, feminist, writer and maverick. Actors and actresses read or pay tribute. David's daughter, Lupa sings 'Danny Boy'. Ian McKellen reads 'This body is not me'.

Tim Spall and Denise are funny. Den tells rude Pam jokes (opera has to be seen as well as heard, it's the difference between a fuck and a wank), ending with a quote from my poem 'Pam is in her study'.

Then we're out. Photographers snapping stars. After a drink with Mum, Dad, the Hurford clan and others at BAFTA, we wander off, through St James Park. Just before the service began I've seen Jonny and David talking to each other. As I mention this, Jonny roars up behind us and we have a chat.

He says, with some amazement, that it's brought the family together. He and David are talking. Wonderful to see Jonny resurrected, like a phoenix from the ashes. Dandy, Denise and I travel on to Graham's 'Home Service' gig but, a few songs into the second half, we tiptoe away, Denise sobbing, just exhausted.

Back home, all the events break like little waves over me. Eric almost running back into the church to say hello to Jonny and reminding him of 'Rimini' (where he took us with his school party when we were 17) and Jonny and I sharing a surprised look (we were naughty boys). Or Mum, sitting up front, just next to Sir Ian McKellen as he spoke (Mum has loved theatre all her life and, almost deaf now, could hear every word he said). Or everyone hugging each other.

Sara was my first wife. Jonny was my great friend but he's not one to stay in touch. It feels as if, with Pam's going, there's an end. My forty-year friendship with John Hurford seems much stronger. In a way, we were both Pam's babes.

It would have been hard to be Pam and Keith's children, they were both so wired. As a teenage interloper, I got only the advantages, of the freedom they inspired. Keith's freedom as a 'man of the world'. Pam's freedom as a woman of heart and mind. Could be unreasonable, selfish, a kind of anarchy, the liberty they allowed themselves and others. I'm so grateful.

Days follow days. I shroud my grief in televised tennis matches. Odd, I suppose things will change and, through this endlessly warm summer weather, I'll discover how. It's hard to let go of Pam and Stella and the worlds they held together just now.

Denise has been offered the Mother Superior role in Sister Act, to tour the country from september for a year or more. A year!

...And I know she'll be afraid to take it. We've never been so long apart, not since we first met 30 years ago.

But it's clear that she should take it. Quite apart from the 'silly money' that'll pay off a chunk of our mortgage, buy her a boat and the fact that it's a starring role in a number one tour of a big musical, it'll sort Den out after what's happened.

So my job will be to make sure she's positive and happy when rehearsals begin mid august. This is not entirely selfless.

I'm going to have to get myself going, get this work finished and start facing life in my sixties. If Denise is happy, I've a chance to do that. But a year!

5 Being Special

What qualifies biological life as something special
except that we ourselves are biologically alive
and would like to be as special as possible...

I've been trying to arrive
at a sustainable definition for 'life'
it seems it's hard for others too, I don't know why
but if these encapsulations from learned publications
centres of erudition, specialists and geniuses
reference works and treatises
are anything to go by
the single clear definition of life is:

"A self-sustaining chemical system capable of Darwinian evolution"
it's *ipso facto* right, but here's another contribution
"a kind of matter possessing that subtle combination of properties
to which we are accustomed to apply the epithet 'living'"
yes, well, let's see what else we've got
"a characteristic that distinguishes objects
with signaling and self-sustaining processes
from those that do not"
what?

Some explanations make umpteen stipulations
such as "that which undergoes metabolism, maintains homeostasis
possesses a capacity to grow, responds to stimuli, reproduces
and, through natural selection, adapts to its environment in successive generations"
while, shorter than the latter
"the conditions which distinguish
active organisms from inorganic matter"

There are so many definitions, I'll just list them
according to Encyclopaedia Britannica's wisdom
life is "an open system of linked organic reactions
catalyzed at low temperatures by specific enzymes
which are themselves products of the system"
hmm...

The late Erwin Schrödinger joins the scrum
with "that which avoids the decay into equilibrium"

or there's this one
“the condition that distinguishes animal and plant
from inorganic object and dead organism
manifested by growth through metabolism
reproduction, and adaptation to environment
through changes originating internally”
or simply “distinguished by its specified complexity”
or “that which makes use of, or produces proteins
and/or nucleic acids” or alternatively
“that which biologists study”
(which ain't helpful buddy)
why will no single clear encapsulation appear
when this is all I want to hear...

Life is a unique innovation
the ultimate cosmic manifestation
with its own internal administration
that flies in the face of entropic degradation
a divine intimation and the summit of creation
it's easy to see, without vanity
human apes are the zenith of biology
just as I am the apex of humanity

Yet the more I look, the more the definitions blur
life is “a group of chemical systems in which free energy is released
as a part of the reactions of one or more of the systems that occur
and in which some of this free energy is used in the reactions
of one or more of the remaining systems”
er?

Or this natty acronym with an automobile connection
“CITROENS – Complex Information-Transforming
Reproducing Objects that Evolve by Natural Selection”
or this one here – “the activity of a biosphere”
“all living systems are composed of cells” says Oparin
“but, conversely” says Steven Potter, from whom many of these quotes come
“the oil-vinegar emulsion in your salad dressing is composed of many cells
but is obviously on the non-life end of the continuum”

None of the definitions concur
a pox on the paradox, my mind's a whirl
just give me the fucking answer

The trouble is, there are no unique specifics
neither movement, reproduction nor 'metabolics'
phrases like "wot biologists study" are self-fulfilling tricks
while "distinguished by its specified complexity" is just bizarre
(and who can demonstrate whether a planet or a star is or isn't sensate)
so we don't know who we are, nor where we're bound
the most poetic description I've found
says life is "just an aspect of man's perception of matter
as music is an aspect of his perception of sound"
which poetically stabs us with our own analytical knife
saying that we are sensate beings, is just the way we see things
biology may be rife but "there is no point along the continuum of existence
from the simplest atom to the most complex animal
at which a line can be drawn separating life from non-life"

Hmph. I feel strangely put-down
and would very much like to reassert my importance
of course all these different and confusing definitions
may just be a good opportunity to laugh at science
since life is something we think we all intuitively sense
but whether in science or religion, we've made the division
between animate and inanimate, used it to celebrate and isolate
our biological kingdom – and that's where we get our intuition from
yet in this unknown world, experience runs the gamut
the sound that causes panic, may not always be organic
it may be a falling rock or wind whistling across the planet
and that's because the whole universe is 'animate', goddammit

As Earth heats up, clouds form and rise
scurry across the skies, while temperatures polarise and a storm begins
ocean currents churn, undersea rifts erupt, lightning forks and Earth spins
in a spinning cosmos where all its spinning atoms co-ordinate and collaborate
where stars and galaxies are born, who live and die, as clouds evolve and evaporate

Whether a proton-pumping cell, a fiery sun, an ocean wave or a tiny vibration
everything in creation is an energy-transfer of some sort, a communication
so perhaps I am a message that has got to get across
a self-organising form in a self-organising cosmos
a microcosm of the boss
does that mean I'm important – no, it makes me cross
even my feelings and sensations are just tiny fluctuations
I feel hopelessly insignificant, underrated and neglected
though I suppose, at least as a microcosm, I do feel connected

Life's certainly made of the same cosmic stuff, there's no special trick
no fairy dust, unless it's electromagnetic
of course there are specific qualities which us life-forms exude
I've never seen my plate guzzle any of the food

But I don't think I can ever again entertain being a super-hero
a unique creature made specially by the Divine Force
the centre of all I survey and bearer of a sacred purpose
I might be wrong of course
I'd hate to get hauled up before the Great One
and told I'd not fulfilled his scheme
since I obviously did not heed his words
"climb every mountain till you find your dream"

Nonetheless, thinking about it, life would seem
more like a variation upon a theme
it may, however, be a variation crucial to Earth
Earth certainly starts pumping out organics as soon as it can
soon after its birth, as the rocks show
there's evidence of life here almost 4 billion years ago

I've been living in this water world almost 4 billion years ago, which I only realise when Denise calls me up into the sunshine. We're driving to her Dad's. Don's a single man now, living alone in the family home. My selfish self doesn't want to face his grief or even visit that house again. I haven't been back to Pam's. Also, Denise has been up and down, the last few weeks, as you'd expect. I know how it is, comes in waves. One minute you're perfectly alright, getting on with things or chatting merrily. Then it comes over you. So I'm a bit of a chameleon at the moment, serving the situation, shape-shifting, biding my time. But I can only stretch so far and I'm nervous about how Don will be when we get there.

The front lawn is strewn with things from the house. Beyond the summer house, a great tree has been chopped down. All the windows and doors are open and a radio is blaring out popsongs. Denise is embracing her Dad. You've lost weight, she says. Yes he has, nearly a stone but he's beaming, excited. He wants to show us.

The house inside is transformed. Don introduces us to his painter and decorator, Matt, a big Polish bloke with a big kind baby face. Matt not only does every job to perfection, beyond even engineer Don's standards, he also looks out for Don. If I'm about to lift something, Matt's there before me, he says, warmly. Also, Matt's youth, energy, smiley face and radio blow the cobwebs away. To Denise, it looks like the house that Don designed and they moved into once upon a time and she glides through the rooms in wonder.

Don takes us out to eat. Can't cook anything here, he says. I sit in the back of the car, listening to father and daughter. We arrive at a family pub, plonk ourselves outside in the sunshine, by the sea and order Sunday roast and beer.

Don has come to a decision and he doesn't want to hurt our feelings. He will sell or let the house and move in with Carol and Duncan in Southsea. To be honest, he doesn't even like Brighton. Denise giggles. Of course not Dad, anyway all your friends are around Carol's. It's true, he admits. He'd only moved to Hayling because Stella's mother and grandmother had needed caring for.

The meals arrive. We tuck in. Don says he wants us to have Stella's lovely piano that I played for her when she was dying and I tiptoe off for a moment to have a cigarette. The shock is really how alive Don is. He's restless, intends to sell his car (in which, just a couple of weeks ago, he drove Sam and Dandy through the windy lanes of Hayling at over 50 miles an hour and they came back squealing about it) and replace it with one of those old people motor buggies, so he can go to the shops or the seaside now his legs aren't so good. Carol and Duncan have a granny annex they set up when they moved their dental practice across the road. At the time we assumed it would be for Stella, because Don had a heart attack nearly 20 years ago and his ticker's been dodgy since.

His ticker may be dodgy but his energy is an inspiration. I know it must be backed by courage, itself backed by the discipline of the Navy, at sea, at war. Denise has that steely quality, something I've to learn. Back at the house, Matt is still at work and I realise it's Sunday. Yes, says Don, Matt's here every day of the week and often doesn't leave till 9 at night. Knowing Don and Den will want to talk, I take a turn round the garden, which is really the only place that's like it was when we all played croquet or had tea on the lawn while kids and dogs ran about. I expected to be overwhelmed by the past. I've been challenged by Don, who says move on. It's only as we're leaving that he lets slip that he finds it hard to motivate himself. However, he's already made a scale model of the flat he'll move into, working out which furniture will fit where.

On the way home, Denise has little worries. The flat is presently let and won't become available until at least christmas. And she'll be away for a year on tour and won't see him. I reassure her. Don's excited about the tour. They'll chat by phone, she'll visit when she can. Yes, she says and she's organising a sunday gig on Hayling, Dad's helping. Here we go.

This is not the story of Eve
the birth of one original female
with the unique ability to reproduce
this is a production line on a massive scale
developing millions of self-replicating individuals
chemo-types of infinite variety, using different materials
producing different cell membranes and different chemicals

Some use ferrous iron or sulphur, then again
others use carbon dioxide and hydrogen
some produce methane, but wait
others produce acetate
as if chemistry wiles away its days
creating endless and diverse pathways
through organisms' metabolisms and genes
as if it wishes to achieve by whatever means

As these creatures proliferate
they collaborate with each other
waste of one, becoming food for another
and this symbiosis is not limited to food and energy
as nucleic acids and bases weave strands of deoxyribonucleic beauty
each single-celled critter cross-pollinates
passing and sharing hereditary traits
globally

Bacteria have 3 ways
to update their DNAs
they can steal it from a dead one
or, via a viral form, be fed one
or, right across the prokaryote zoo
(that is, even with those they know
they're not related to)
they can connect up, via a 'pilus'
and, copying as they go
spool the updates through

Bacteria "routinely and rapidly"
find a momentary lover
transferring genetic material
which their DNA may not cover

So as life gathers its forces
and develops its resources
their DNAs copy and spool
which Lynn Margulis and Dorian Sagan address
observing "all the world's bacteria essentially have access
to a single gene pool"

Bacteriologist Sorin Sonea agrees
bacteria shouldn't be grouped into species
since they share DNA and possess the means
to change up to 15 percent of their genes in a day

They perform genetic engineering and its mechanism
known as 'lateral gene-transference' forces us to conceive
that what is happening is the development of a super-organism
a single learning process with a hunger to achieve
a single, colossal Eve

In order to consider the mind of nature
I need to consider the nature of 'mind'
it isn't a thing but an ongoing event
(of not knowing the future, of working blind)
the process of being cognizant
aware of all the dangers out there
primed, alert, hoping I know how
to make use of, or avert whatever happens now
without getting hurt, taking care of my health
and by being aware of what's out there
being aware of myself

Diffugia coronata is an amoeba
a single cell who swims alone
in its own little house of stone
which it builds from hundreds of grains
on top of which, as Mike Hansell explains
there are "seven or eight sturdy spikes" sharp enough to rip
built by gluing "larger grains at the base, smallest at the tip"
defense is obviously what they're for
while in the floor, it makes a beautiful frilly door

This spherical home's diameter
is about 150-thousandths of a millimetre
and when the creature grows big enough
and splits in two, one takes the home
the other's left with a pile of sand
with which to make its own

Diffugia and me, we do our best
try to make better choices than the rest
it's a test, assess a problem, find a solution
cos critters that improve on, thereby move on
and this ongoing quest is the process of evolution

The path Eve paves
is no sweet succession of earthly paradises
no neat progression of timely innovations
charting how Eve behaves, the strange thing
is that, after eons of nothing, there are sudden dramatic crises
triggering transformations in which millions go to their graves
and where everything's changing, rearranging
change, like energy, comes in waves

6 When The Tough Get Going

(the going gets tough)

The relentless drive to survive
rises whenever we face a crisis
crises catalyse evolution
like an alternating current
begging a solution, forcing the plot
either when things we mustn't have are present
or when things we need but haven't got, are not

We need nitrogen, can't do without
luckily there's a lot of nitrogen gas about
unfortunately we can't use it in that state
it needs to be 'fixed', as ammonium or nitrate
luckily lightning will fix it and there's a lot about
on early Earth, enough for life, when it's starting out
but as the ocean teams and begins to fill
with life, demand increases until
the supply no longer suffices
crisis

Forced to find new ways
these early prokaryotes make a stunning contribution
the enzyme-complex nitrogenase is a very costly solution
(with 8 units of energy used, for each unit of nitrogenase produced)
but it works and the microbes who learn to brew it
are still the only ones who can do it

But watch out, there's a poison about
a highly volatile toxin that'll shack up with almost anything
it'll make water, CO₂, almost nothing it can't do
oxygen is useful stuff but for life, a bitter pill
since it'll rust the irons in proteins, DNAs
deactivate nitrogenase, it will kill
there is no end to the abuse
when oxygen's on the loose
you need it to vamoose

Are there any devices
to avert this crisis

Ancient archaea, no doubt probin'
develop 'globin'
whose biological applications will grow
globins are heme-containing sensors that enlist
the help of iron (which oxygen can't resist)
to find, bind and carry off their foe

Microbiologist Maqsudul Alam
describes globin as "the nose and hand
of the archaea" that can sense and disarm
oxygen, "bind and remove it from the cell
before it can do any harm"

As early life blossoms in the deep, blind sea
fermenting sugars into energy
picking up skills in response
to the things it fears and the things it wants
some bright or challenged cells
reflecting and echoing their world, begin
to sense weak light filtering in
through sensitive pigments in their skin
rendering the cell a brilliant hue
orange, purple, red, green, yellow or blue
depending on the frequency they're tuning into
and using the electric juice to produce
an organic compound from whatever's around
'light-eaters' who discover sight
first solar-powered life on earth
the first to see the light

But they can't come to the surface
as they no doubt discern
it's a fiery place
with ultraviolet rays
in which they burn

Enter the most extraordinary life-form of all
a cell that learns to play ball with the Sun
and the same little critter who began it
will go on to transform the face of the planet
it's an organism that still thrives
and is crucial to all our lives

It's the blue-green smear
on a bathroom shower, it'll appear
in soil or even on rock that's bare
in salty seas as well as fresh water
this amazing cell is everywhere
in sponges, lichens, plants, in sloth fur
wherever carbon dioxide, water and sunlight occur
sunlight ought to cause it's slaughter, but it doesn't fry
and that is why there's no organism superior
to cyanobacteria

Since prokaryotes swap genes
cyanobacteria are blessed
with the gift of using globin
to see off the oxygen pest
with a flair for fixing nitrogen
and with photosensitive skin
but way above the rest
it is raw violent sunlight
which is their great conquest

Cyanobacteria develop ways
to avoid ultraviolet rays
to defend against them as well
as repair any damage to the cell

They can move away from the cruel skies
by adjusting the concentration
of gas-filled sacs they develop to optimise
the use of light and threat of irradiation

They can defend their precarious situation
with specialised amino acids which they engage
to absorb UV light before it can do damage

They use a pigment called scytonemin
as a sun-screen when the Sun's too bright
and are able to produce and replace
the proteins most affected by UV light

But that's not the half of it, for these little jewels
learn to use violet light to split water and carbon-dioxide molecules

Six molecules of water plus six molecules of CO₂
and, hey presto, one molecule of sugar just for you

(The molecule that traps the light
looks like an antenna and in that state
capturing solar energy, it begins to vibrate
a chain of molecules pass the power
humming as they go
like a series of vibrating tuning forks
into the cell where signal splits the CO₂ and H₂O)

There is no end to the amount
of carbon dioxide in the atmosphere
of water in the ocean, or of light from the sun
so, having begun, there's no end to the photosynthesising they can perform
it's the motherload and cyanobacteria take the world by storm
as their mass gets greater, the process gets faster
till they create a crisis, a catastrophe
a global disaster

Because, for each molecule of sugar on which they feast
six molecules of oxygen are released
and oxygen is a venomous beast

At first it infects other elements, rusting iron, nickel and so on
but when every possibility for its containment is gone
free oxygen begins to build up in the seas
wiping out unknown numbers of species

Life has grown up in a hydrothermal vent
specifically in the absence of this element
so, with this toxic pollutant on the rise
the web of life has to fundamentally reorganise

Life already has the mechanisms to solve
the oxygen crisis and survive these cataclysms
the globin, used by early organisms
to convey oxygen away will evolve
into the hemoglobin that propels
oxygen from our lungs to our cells
so the ability to isolate a poison and defuse it
will become the ability to breathe it in and use it

And who achieves this miraculous transformation
none other than the sensationally superior
cyanobacteria

Here is what the wonderful James Lovelock has to say
“the blue-green bacteria invented a metabolic system
that required the very substance that had been a deadly poison
...the breathing of oxygen is an ingeniously efficient way
of channeling and exploiting the reactivity of oxygen
it is essentially controlled combustion
that breaks down organic molecules
and yields carbon-dioxide, water
and a great deal of energy in the bargain
...the microcosm did more than adapt”
like Lovelock, it wasn’t just clever
“it evolved an oxygen-using
dynamo that changed life and
its terrestrial dwelling place
forever”

And that’s not all, as Lovelock will detect
there’s a further profound effect
as the two new processes knit
here’s a précis of Fritjof Capra’s description of it

The blue-green bacteria
now have two complementary systems in operation
the generation of free oxygen through photosynthesis
and its absorption through respiration

This enables them to set up feedback loops
that will regulate the atmosphere’s oxygen content
maintaining it at the delicate balance that allows Earth to house
the new oxygen-breathing forms of life and fuel their development

(The proportion of free oxygen in the air
eventually stabilises at 21 percent, which is all to the good
since below 15 nothing would burn, while above 25, everything would)

In addition, a layer of ozone
3-atom molecules of oxygen
gradually builds up at the top of the atmosphere
blocks out UV light and makes it safe down here

I can see this whole journey as an endless revolution
crisis followed by solution, an ongoing dynamic state
developed by the supreme will-power of life
in its struggle to survive and proliferate

Or I can see it from the planet's point of view
finding ways to conserve and renew its energy
ingeniously developing biology
to capture the Sun's power and direct it
in ways Earth needs to support and protect it

Either way, every plant cell on the planet relies
on chloroplasts who photosynthesise
whose ancestors are cyanobacteria
while all plant and animal cells
contain oxygen-processing organelles
called mitochondria
whose ancestors are also cyanobacteria

So cometh the hour, Earth's life-forms climb
to the surface to meet and draw in the Sun's heat
to use the oxygen they produce
increasing their power until, over time
they can frolick and flower and all because of the blue-green slime

Since, by every evolutionary criteria, they are superior
so from Ceylon to Siberia, let's all give a cheer for cyanobacteria

I've decided to take a fortnight off, starting next week, not because I need it. I'm fine, but I've taught straight through from new year and I'll be teaching through to Christmas if I don't take a break. Also I can spend some time with Den before rehearsals start. And Amanda is coming down from the north for a few days, with her daughter Jessie. Amanda was our first au pair and was there when Dandy was born. In fact it was the three of us, bouncing names around, that resulted in Dandy Eleanor. So anyway, I look forward to a couple of weeks off teaching, setting myself up for the year ahead.

Honestly, this year. It began with our old dog, Smilah's mum Delilah dying. Denise said at the time it was an omen. But even now it doesn't stop. Dandy's very best friend Shauna was fooling around at some pop festival, when some bloke fell on her awkwardly and broke her back. She's in a brace. Dandy visits. Yesterday Sam told me that, rather than going to work at the yacht-valetting and repairing job he's got down at the marina, he went to London to see his friend Lewis (whom I taught when I was a school teacher) in hospital. His liver has packed up, he looked unrecognisable, yellow, bloated. They're talking about a transplant.

How can you get clear of all this if it keeps on happening? Richard and Karen, valued employees of Westminster Council for decades, may face redundancy this autumn. Cutbacks of the recession. On the other hand, without telling us, Richard has rehearsed, organised and performed a solo piano gig in London. First performance in over twenty years. So he's up and at 'em. Haven't seen him so relaxed, self-possessed, so happy, since I don't know when. He's let his hair grow long and become an artist again.

If I look around me, Sara no longer has depressions, her brother Jonny is somehow back after years of hepatitis C, Denise is off on tour, Dandy will be back at uni come september, Sam gets up early and out to a job he likes, while Don is forging a new path, quick as he can.

I'm being asked to reinvent myself, it happens every so often. Except that usually there's a crisis, an imperative, I've to leap this way or that. As for bacteria when poisonous oxygen threatens, or myself at the end of my first marriage. But I've jumped through all those life hoops, career, marriage, kids. Done and dusted. I could just sit here, breathing in the warm summer air, staring into nowhere, forever. Everyone else is off having a life but I'm secure, no crisis. I've no argument with anyone, there's nothing I want to prove. I know that the trick is helping others but I can't just live vicariously. I watch Norman two doors along, sitting watching telly night after night. He potters. He's in his eighties. Makes me shudder. I want to run away from death but don't know which direction.

Doorbell rings. It's Catherine for a lesson. After this, she's back to Ireland for a while, then somewhere else. She only returns a week or so before her gig, where she'll perform all the new songs I've been helping her with the last year. Trouble is, most of the songs are slow. Many are beautiful, haunting. But as I listen and make notes, all I can think is that she needs at least five new, fast songs. How's she gonna do that? This series of songs is intentionally autobiographical. It was a way, when I met her, of zoning in on potential material: sing us moments from your life. But of course, it's all got a bit elegiac. What about moments of conflict in relationships, a row where she's told someone what she really thinks of them? Fast and furious, passions rather than emotions or sentiments. I make my suggestions. She takes it in her stride, makes a list of possible subjects and the doorbell rings.

Oh no, it's Jacky. I'm hurriedly saying goodbye to Catherine, wishing her luck and now I'm stuck in a small garden studio with Jacky, who sings slightly off-key, but with tremendous energy. She can't be taught. All she has to do is listen. When her ears are open, she can sing in tune. But she doesn't. I feel like a fraud. I've suggested that she's learnt all she needs to know – I've been through everything umpteen times. But she says she loves her lessons. And she does. She's singing full volume, with a big happy smile on her face. I have to turn away. How many more minutes to go? Forty-nine. Then it's two weeks off. I'll have to rethink my whole attitude to giving these lessons. Never mind reinventing myself. Reinvent teaching – what I teach, how I teach and who I teach. That was fabulous darling, I've recorded it, I tell Jackie. While I'm saving the recording, she chatters away. She's a nice jolly person, a nurse, but I'm a bloke, can't multitask and have to block her out while I set up the backing track, ready to record her next vocal offering.

She manages to record nine tracks before I notice the time. We've gone way over. I had to, because I don't feel I'm teaching her, so I must give her her money's-worth time-wise. And also because my resistance is gone, I'm almost comatose.

Lessons go well? asks Denise. I grunt and lie down on the sofa.

7 Sex

Sex is already a player
among bacteria and archaea
and each little cell
can reproduce as well

Sex is when two creatures shack up and conjugate
where one presents the other with the means
to update their genes
gene transference is sex and sex is free
whatever strain or variety
they can have pretty much whoever they fancy
and whatever the risk encountered thus
they're certainly promiscuous

Reproduction's something else
when an organism swells
and the one becomes two cells
no, make that four, now it's eight
sixteen, thirty-two, sixty-four, wait
the point is, in prokaryotes, sex and reproduction are separate

The world these early critters conjure up is complex
replete with genetic code, metabolism, cell walls
reproduction, nitrogen-fixing and sex
their greatest achievement
as they take the world by storm
is to regulate the environment, optimising
oxygen content by breathing and photosynthesising
a task they still perform
and they're still the most sensitive, adaptable, resilient
but there are limits to their potential for development

For, despite their wide diversity
of content, structure, organisation
prokaryotes can only maintain
a finite amount of information
against loss and mutation
and that's the trouble
they're little more than DNA
stranded in a bubble

Enter level two of symbiosis
(if level one is gene transfer, the osmosis
that drives prokaryotes' cross-pollinating lives)
level two is engulfment, where the organism you eat, survives

A hydrothermal vent
may seem like a hostile environment
but archaea who live there are quite content
until the chemicals they graze on
become infested with toxic oxygen
and they're forced into a strange liaison, an experiment
whereby anaerobic archaea, as a way to survive
form a symbiotic friendship with aerobic bacteria
which becomes the basis for all future life

The oxygen crisis isn't some momentary bore
it lasts a billion years or more
and for archaea on the ocean floor
oxygen's the breath of death and as it saturates the deep
they've to change the company they keep

For example, proteobacteria who learn
to breathe oxygen, give off hydrogen as waste
so hydrogen-eating archaea sidle up to them
and find themselves strategically placed
the archaeon gets rid of the hydrogen
the bacterium get rids of the oxygen
until this unlikely state of grace
becomes a symbiotic embrace

But love can be possessive
and as ages pass, poor old proteo may discover
that the genetically-dominant archaeon
has started to almost entirely cover
it's hydrogen-dealing, oxygen-sealing lover

Yet what would happen to archaeon
if proteo should die
no more oxygen protection
no more hydrogen supply
that's too high a cost
it couldn't carry on
all would be lost

So while it may steal away
the bulk of proteo's DNA
it keeps it alive with the genes to survive
and digest its meal with oxygen-eating zeal
sealed in a separate organelle within its cell

And this creature within a creature, this cell within a cell
with its own DNA and reproductive skills as well
is the ancestor of the mitochondria
oxygen-processing mechanisms
in all future organisms

And this 'engorgement' process
known as 'endo-symbiosis'
produces new, composite 'eukaryote' cells
with emerging nuclei and increasing amounts
of endo-symbiotically engorged organelles
each with specialised enzymes in protein shells
and becomes the solution that promotes
all future evolution – we are all eukaryotes

These nucleated cells are evolutionary marvels
much of what has been achieved externally can now begin
to be achieved by nucleus and organelles within
and after countless generations of engorging and reorganising
very sophisticated organisms appear
with very sophisticated gear, forging a further seismic shift
from sharing to bewaring, as it becomes clear
that lateral gene transfer may now be more a threat than a gift

But no sex, no diversity – no diversity, no development
and that leads to entropy – you've got to keep up the pace
to stay abreast of all the rest, as the Red Queen says
"it takes all the running you can do to keep in the same place"

Time then for a new kind of sex
first you've to find the right kind of mate
make careful checks, no need for perfection
but you don't want to end up with a virus or a bacterial infection
choose a nice eukaryote, just like yourself
someone with keen wits, good health, who never quits
so your kids will have all the benefits

Sexual reproduction has a lot going for it
but there are some serious ramifications
as many of us know from our own situations
even if you find a partner with suitable grooming
you've to compromise, it's time and energy consuming
sex takes it out of you – how much easier an endeavour
just to divide and be done with it – and as you sprout
watch thousands of little yous swimming about
all just as stupid, just as clever
ensuring that you live forever

With sexual reproduction
we don't get the updated software
it isn't the parents who survive
our kids are the updated ones
they're the ones to thrive
our sex-drives mean we sacrifice
our lives with every breath
with sexual reproduction
comes death

Prokaryotes share their genetic forces
differ only in response to environment and resources

Eukaryotes are far more selective
self-contained, self-possessed, self-protective
so conjugation is confined to their own kind
where binary fission produces eggs and sperm
where DNA is divided and recombined
as the new organisms spend their days
living, dying, developing and diversifying
along their own creative pathways

They mate, gestate and speciate
this new world unleashes specific species
nouveau riches, following their noses
they're far more complex but it's the end of free sex
and the start of a third level of symbiosis
the instigation of a new form of co-operation
a new system of altruism, ushering in
the tribal colony, the family
the world of kith and kin

As oxygen billows through the seas
these eukaryotes develop new species by the ton
building systems upon systems
colonies of single-celled organisms
that act as one

As the oxygen crisis rages, producing endless ice ages
as bodies cling to each other for the warmth they provide
genes coded for cells to divide, decide
to remain tied, life's much more fun
if they act as one

Different cells that specialise, forge partnerships, reorganise
where genetic material migrates, where deals are done
to form coherent chains of command
that act as one...

And falling under a single spell
here's a fourth level of symbiosis
creatures with more than one cell

Multicellularity
evolves dozens of times independently
but the process is begun by the same species
who first breathe oxygen, who first draw energy from the Sun
cyanobacteria are the first to form colonies
that act as one

While inclement weather
may cause similar cells to cling together
cells with very different talents may start congregating
those with a gift for metabolics, for movement or mating
for developing a nervous system, all co-operating
and thereby creating multicellular creatures
with differentiated features, each specialised skill
bending its will, each with a role
a task to fulfill within the whole

Until a single cell can arise
with qualities each parent supplies
and that serves as the creature's renewal
since this fertilised cell knows how to devise
all the specialised cells that comprise the adult individual

Rising oxygen breeds big buggers fast
in fact aerobic respiration's a required adaptation
since the energy needs of multicellularity are vast

But that way every advantage lies
for reaching up to filter-feed or photosynthesise
for attacking or defending, big things cannot be defied
to make an inner world and hide from the world outside
to network information and thus raise intelligence
for migrating to, or creating new environments
and last but not least of the blessings it brings
big things can feast on little things

In this new world
all forms of symbiosis make the rounds
with multicellularity, cells reproducing sexually
genes transferring laterally, while endosymbiosis abounds
as all pathways cohabit, developing their niches
among these increasingly complex species
and the whole shebang, the biosphere
engages in a single process
of total symbiosis

But there is no reason
to think nature takes an interest
in specific pathways of its evolution
speciation, colonisation and all the rest
only that what needs to be done, gets done
and it'll simply flow best where resistance is lowest

Nor is the situation blissful cohabitation
I don't want something to engulf me, how dare it
surely this is my life, why must I share it
Stella once said she 'had to put up with sex'
nature's miraculous but one suspects
that sometimes you've just got to grin and bear it

I've been ill, wouldn't you know it. Like sundays on the road when you wake up ill because there's no show that night. By the time Amanda and Jessie arrived, the infection was over, just blocked sinuses and lungs full of snot.

Which is why swimming is a good idea. Denise and I have found a beach. Not the long straight pebble beach crowded with day trippers, but a little curved man-made bay, surrounded by rocks,

with sand at low tide. Apparently it's where Fat Boy Slim lives and the popular Heather McCartney. Feels like some Mediterranean destination, baking hot as I change into swimming gear. The three girls are already afloat. It's warm they tell me.

It's delicious. Not even the little shocks to the balls as I wade in and launch myself into a leisurely swim. Afloat on my back beneath a dazzling blue sky, let the water carry me.

Denise has brought her dinghy and for a while I hear Jessie's laughs and cries as she slides off into the water or tries to climb back in. Denise and Amanda are chatting as they play with Jessie. But after a while, the dinghy's been jettisoned. The water is where we want to be, our home, which we return to for holidays.

Hardly a ripple, just resting on the surface, basking in the rich summer heat. Squeals from kids at play somewhere far away and seagulls mewling. This is what I thought life was all about, when I was a kid. Days on the beach, having fun or just hanging out. I'll have more of that, I thought, when I'm a grown-up. Then, one day to the next, I was out of education and into work. Everything was to do with moving forward. I tell myself now I've to 'reinvent' myself, but perhaps I could make a virtue of living in the moment, floating like a lily pad.

Holding my breath, I cruise along underwater, going with the flow. Wave patterns on the sandy floor, plus the odd rock, strategically placed to stub the odd toe. I duck beneath a jungle of floating seaweed to investigate. There are probably millions of microbes here but no little creatures I can see, just marbled green light percolating through. Coming up for air, I hear Jessie calling. It's picnic time. I play a few underwater games, twirling around in circles beneath the surface, partly because it's a lovely feeling, three-dimensional freedom, partly to clear sinuses and get my lungs working, before wading out to join the picnic.

Around the corner there's a fresh fish shop, by the docks where fishing boats come in. We buy some for a curry dish, which Amanda will cook on her last night, tomorrow.

Tonight we're sat outside, at a French restaurant in the marina. Deep red sunset, a vortex of starlings weaving overhead, a chattering of humans out to eat. I enjoy Amanda and Jessie's summer visits. Hard to take a beach holiday away, when you live by a beach. But you don't tend to use it, unless friends come. And it's lovely to see Denise's face wreathed in smiles, laughing and joking. I also feel better, can breathe again.

I've spent the day watching how people perform
when the sun is bright, when the water's warm
from promenade to pier we swarm
letting go, laughing, drinking in the light
like the wheeling starlings, it's a glorious sight
Amanda and I talk long into the night
the things she'll do when Jessie's grown
I remember that feeling when our own
kids were kids and how time's flown
and if I'd known the challenges ahead
would I have chosen a another path instead...
it's four before I crawl into bed
and find peace beside beloved Denise

8 Snowballs and Fireballs

Our Sun appears to be
one of the brightest stars in the galaxy
fusing helium at a rate that's reckoned
to be half a billion tons per second
whilst beaming out ions and electrons
in all directions

Twisting and reversing
its vast spiral structure underpinned
by the sun itself rotating, its polarities flipping
with plasma looping back or whipping out as solar wind

Some planets do not fare so well
drained of power, they're still circling
swept around within the Sun's carousel
but dead, like poor inert Mars, god of nothing

In this, Earth stands apart
a small sun beating at its heart, a dynamo
where energy shooting out above, shoots back in below
forming a spectral apple where plasmas flow, directed
such that Earth is both protected and connected

While the solar wind whistles by
at over a million miles per hour
magnetic reconnection allows Earth
to draw on the Sun's power and, together
drive Earth's climate and its weather

Seen from southern skies
Earth systems all flow clockwise
the inner core, the planet's spin
the ring current of the magnetosphere
and the jet streams within the atmosphere

Of these waving rivers of wind blowing from the west
the two polar jets are fastest and most powerful
flowing some ten kilometres above sea level
while weaker subtropical jets stream by
some thirteen kilometres high

Between convection currents spewing out new crust
and Earth's dynamo, flowing pole to pole
between land and sky where jet streams gust
amid crackling electric storms
a film of prismic water forms, a flux
that captures and conducts

Within
tiny tiny microbes begin
their existence as minute autocatalytic events
forged by Earth's energy and chemical contents
thrust through the crust, reacting with water in alkaline vents

Tiny tiny organisms setting out
in a tempestuous ocean
wriggling about, developing motion
secretory pumps becoming rotary engines
driving paddles with which it swims
flagella, cilia and eventually, limbs

As life seeks improvement
from cell walls to independent movement
rising magmas roar
creating ever more ocean floor
cracking crust into cratons that ride
across the mantle till forced to subside
beneath lighter cratons, comprising
less dense rock that remains on top
forming shelves that keep on rising

To save themselves
microbes trapped upon these shallow shelves
with only a thin veneer of sediment to protect them
from the glaring Sun, are forced to fight
to do or die, to photosynthesise or fry
life is forced into the light
forced to produce
oxygen

Photosynthesis gives life recourse
to a vast external energy resource
by releasing and breathing oxygen
it develops its own ingenious system

The biosphere forms a continuous film of life beneath a radiant Sun
exploring and inhabiting every gradient, microbes by the ton
learning to breathe the oxygen, if only by engorging
as organisms all but smother one another, forging
complex nucleated cells and then reorganising
speciating, colonising, enabling life to attain
some control of its domain

All of which in turn provide Earth
with solar energy while promoting
a steady surface temperature
an increasingly protective coating
as life proliferates, as cratons unite
into great tectonic plates
that rise as continents
into the light

But the rise of oxygen and continents
has a consequence in itself
as large regions of continental shelf
elevating by degrees
create expanses of shallow seas
covered with cyanobacterial colonies
these algal mats rise, tier upon tier
until great carbonate platforms appear
fossilising into rock once they've died
trapping carbon dioxide inside
thus removing it from the atmosphere

Photosynthesis removes carbon dioxide
as oxygen removes methane
and falling on land, the rain also locks
carbon dioxide in the rocks

All these processes cool Earth's surface
the more life rages, the more greenhouse gases
deplete, while rising heat escapes into space and ice amasses
reflecting ever more warmth away to the skies
till, as the cold takes hold, life's earthly paradise is over
and it lurches from crisis to crisis as by stages
the planet ices over
here come the ice ages

Thoughts keep invading as I write. It's the week before rehearsals begin, so Denise has masses to do and I'm aware I must prepare for a year or more alone, seeing her Sundays or just talking on the telephone. I know this work will take me through, at least till March next year. Yet I can't help hoping that something else may appear, to fill the gaps perhaps and raise me up a gear.

Each ice age that comes rolling in
triggers an inverse response
an equal and opposite renaissance

As the glacial surface locks
there's little weathering of rocks
life's dwindling stocks
absorb the shocks
carbonate production stalls
photosynthesis drops
and still the temperature falls
until life all but stops

Earth keeps spewing up new heat
now trapped within its frozen skin
but even as its membrane glaciates
the weight of ice on thin ocean plates
squeezes the magma, increases the pressure until she blows
bursting through, blasting out of deep-sea rifts and volcanoes
kicking up a storm, until a cocktail of fresh hot gases form
carbon, methane, nitrogen, as air and ocean warm up again

And life wakes up
and starts breathing
and photosynthesising
and carbonate platform-building
and rains pour through the rocks, till the store
of greenhouse gases is depleted as before
and an ice age cometh once more

Ice ages lead to nice ages
nice ages trigger ice ages
it's a marathon
as snowball Earth rampages on

I used to write about the human condition. Lyrics in my teens and twenties describe the struggle of an unmarried mum or the feelings of some old codger, like the one I've become. Rows

between married couples, the unconditional love of parents for their children. I seem to have known long before I had my own. It's all out there and, from the start, I was a sucker for the human heart. People would tell me their stories, soon as they met me, confidentially reveal their problems and I'd make suggestions. I was deeply interested until I knew what they'd do, whatever I suggested. Then there was nothing to say. People find their own uncanny way through to the lives they must lead. Me too, and I no longer feed on the human predicament. That passion's spent, I've no idea when it went, but when you can guess how a life will progress, it seems to prohibit involvement. Like knowing the end of a movie, there's nothing in it for me. But being wrapped up in each others' lives is where we get our energy. So I suspect I must reconnect.

Crises stimulate
as conditions alternate
forcing processes to innovate
develop and accelerate
all of Earth's systems
while oxygen levels rise
as does the size of organisms

Continents are built
to the ancient continent of Ur, is added Arctica
(with cratons from the Canadian Shield, Wyoming and Siberia)
next Atlantica (parts of South America plus west and central Africa)
then Nena (northern Europe and North America)
till they lock and the first supercontinent
Rodinia wraps itself around the tropics
changing the ocean currents
weather patterns, rainfall
increasing the dynamics
of fireball snowball

Mountains rise
while glaciers crush
and split the rocks
as lands and oceans freeze
followed by warmer epochs
where sparkling rivers gush
down to salty seas

Falling rain collects carbon
and takes it to meet calcium
rushing down rivers fast and thick
and flushing out into the open ocean
where unwitting life has to do something quick

Although crucial to living cells
calcium must be kept to precise levels
and this is far too high a rate to integrate
excreted, ejected, it continues to accumulate
until, just as with oxygen, life responds
using calcium carbonate to create
coral reefs, exquisite shells
and eventually skeletons

Other thoughts keep on encroaching, with the return of lessons fast approaching. Mustn't do them by rote. Time and again my teaching comes down to students' relationships with themselves. Where a critical parent produces a self-critical young adult, with tensions locking-in self-expressions. The critical faculty is the enemy of the creative impulse. Democracy promotes a critical state, as does the rise of humankind, presently seven billion. Can't do much about that.

I see the conscious mind as an overseer, rather than a critic. The automatic mind is far quicker, able to choose and execute things wonderfully well, when not interfered with. More often than not, I find myself helping to clear away constraints imposed by tensions past or present. That voice that says you can't do it, or you're doing it wrong, doesn't half kill a song.

There's also the idea that achievement requires effort, you've got to grit your teeth. I suppose, if you're doing a job you don't like, you may associate work with toil. I had mild asthma as a kid and sometimes we'd have to do long distance runs. I found that, jogging slowly at the back of the pack, I could work through my asthma. Once I got my breathing up and running, the whole process became rhythmic and effortless. It ceased to be toil and became a lovely physical process. Same with singing, lungs pumping, heart pulsing, yet it feels effortless. Something to do with investing energy and so receiving energy back. I think recently I've been teaching too technically.

Snowball Earth pumps evolution
begging each solution, it compels
colonies that huddle to keep warm
to form creatures made of many cells
each with unique features, according to their niches
becoming species hardened by experience and calcium shells

And once this force has run its course
oxygen's up 12% while, high above the sea
an ozone haze filters out ultraviolet rays
and sponges, starfish, worms, anemone
coral, jellyfish, fungus, and sea lily
the whole humongous gang
are ready for an orgy in the ocean
known as the Cambrian Explosion
life's big bang

It spawns eel-like conodonts, trilobites
sea squids, molluscs, grapolites
fish with spines and scaly skins
with bony flagella known as fins

Till warm shallow seas
awash with fierce life
are crawling at the margins
with tiny air-breathing arthropods
following the microbes ashore
then scorpions, crabs and lungfish
lumbering in on stumpy fins
while algae and lichen endure
in the moisture as rains fall
as the sand becomes loam
as the land becomes home

Where moss forests grow along lakes and streams
vascular plants breathe and photosynthesise
tilting their leaves to catch the sunbeams
conduits between earth and skies
they rise to great height
drinking in the water
bathing in the light

As sharks dominate oceans
on land insects swarm
great forests of seed ferns
dig in their roots
and lungfish transform
into toads and newts
who crawl up on land
and expand

Still the oxygen billows out, creating gigantic creatures
insects with a wing-span of over 35 centimetres
amphibians up to 6 metres long, growing claws
morphing into reptiles and dinosaurs
as lifeforms probe
around the globe
when it all began
on the ocean floors
with a tiny tiny microbe

9 Land Ahoy!

As Earth grows mountains
plateaux, valleys and plains
the Sun still warms the seas
and water vapour still rises
with the microbes it contains
but carried upon the breeze
to where mountains now stand
clouds burst and deliver first life to land
puddles full of microscopic cells
a land of microbes
and what else

Five kinds of critters dance
around the spinning planet
prokaryotes and protists
fungi, animals and plants
the prokaryotes began it
they are Earth's first residents
who evolve from Luca in the vents

Protists are next, those first compound cells
who evolve to solve toxic oxygen issues
replete with their engorged organelles
they may comprise one or many cells
but contain no specialised tissues

The oxygen crisis
spawns all kinds of devices
so protists are full of surprises
and come in all shapes and sizes
they may be 'animal-like' protozoans
they may be 'plant-like', one-celled algae
or 'fungus-like' slime molds and water molds
this is because they provide the laboratory
of dazzling explorations that give birth
to all the funghi, plants and animals
that now inhabit Earth

Protists are water babes who spend their days
feeding and breeding in weird and wonderful ways

Flagellates filter-feed
their flagella finding the food they need
other protists engulf bacteria, swallow them whole
wrapping around them until they're interior, a food vacuole

As the inventors of reproductive sex
some protists have lives which are highly complex

Slime mould in its 'animal' phase
is a herd of individual cells
who forage for microbes and rotting veg
beneath damp logs in ditches and dells
but when the eating is done
they come together as one
and a slug-like creature gels
which crawls on through
to rotting pastures new
throws up a stalk like a tiny tree
grows a fungal-like fruiting body
here's where it stays
in its plant-phase and when
the capsule bursts, out pours
a thousand or more dry spores
like eggs it lays and then
emerging from their shells
a brand new herd of single cells
is born to graze again

Protists are the first eukaryotes to arrive
on land, on wet rock or sand and thrive
but which and how do they survive

The land plants arise
from green algae who photosynthesise
(from these we get mosses and as they advance
hornworts, liverworts and vascular plants)
but for algae this is a tough place to stay
very few survive on land today
yet an animal-like protist relies
on food that can photosynthesise
life ain't sweet without plants to eat
so the 'animals' can't be the first to arise

Then there are the protists who become fungi
they've been evolving in the seas
producing their flagellum-bearing spores
for a billion years or more but there again
they neither photosynthesise nor fix nitrogen
so they can't be first ashore

Here the path becomes a maze
although fungi can't make nitrogenase
they form an ancient bond with those who do
housing prokaryote 'diazotrophs' in their tissue

And although they can't capture light from the skies
they form symbiotic pathways
with algae who photosynthesise
and who also need the nitrogenase

It isn't one kind of critter but three
bacteria, plants and fungi who flock
together to take hold of the bare rock
a joint endeavour, evolving mutually
an organic world beyond the sea

When life on land kicks off
the partnership is probably
between fungi and green algae
who are consorting with diazotrophs
or fungi may liaise
with cyanobacteria who photosynthesise
and as diazotrophs, also metabolise
nitrogen into nitrogenase

Either way these friends
when they're together
are called lichens

Lichens can survive almost any kind of weather
from the deserts to the poles they'll cling on anywhere
they'll toil away on rock that's bare
secreting oxalic acid to break it down enough
to form stuff called soil from water, minerals and air
these compound forms of bacterium, plant and fungus
prepare the way for the rest of us

The tangled journey of these lifeforms
where each evolving symbiont has a say
in the evolution of all the others
means that there is no one way
to peer into this web and thus
I'll follow the fungus...

Fungi don't sit on their laurels
their kingdom includes conks and morels
yeasts and mushrooms, molds and corals
stinkhorns, toadstools, smuts and crusts
truffles, puffballs, jellies, rusts
there's no point making a list
1½ million species exist

As eukaryotes, fungal cells comprise
nuclei with DNA arranged in chromosomes
and organelles, like mitochondria or ribosomes
for building up their protein stores
like early plants they produce spores
like animals they can't photosynthesise
so other living things are their food supplies

Lacking stomachs or chloroplasts
they live and die in their food supply
absorbing it chemically while it lasts
and simply moving on when it's gone

Their cells are tubular thread-like filaments
growing at their tips, searching out nutrients
if one of them discovers a new food source
the whole colony will arrive in force
if there's no more chow on which to feast
thousands of dry spores are released

Fungi engage in staggering arrays of reproductive displays
a third of all fungal species reproduce in different ways
prospective partners may not chat on telephones
but they do chat chemically via pheromones
while sexual reproduction's universal
they also reproduce asexually
by spore dispersal

Although fungal filaments and spores are microscopic
there seems to be no end to the ages and sizes of mold
one clonal colony in an Oregon forest among the conifers
extends over 9 square kilometres and is over 2000 years old

In 2007, a colossal
20-foot-high tree-like fossil,
was finally identified and it appears
it's a giant fungus, extinct for over 350-million years

Fungi live worldwide
can abide where it's extremely unpleasant
evolution will provide some useful adaptation
over sixty fungal species are bioluminescent
some survive UV, even gamma radiation
they're a goddam inspiration

Almost every plant depends
on its fungi and diazotroph friends
who shack up over 400 million years ago
in the tissues of the first land plants to grow

Plant roots and their fungi chatter away
working the land together night and day
in a forest, all the trees are integrated
in a vast fungal network, calculated
to hold and channel moisture above the sea
to harness sunlight, conserve Earth's energy
transforming a world of heat and dust
by coating the harsh reflective crust
with sophisticated circuitry set to adjust
with acute sensitivity

And the way these 3 forms interlock
producing rich moist soil from sand
formed and forms the biological bedrock
these are the roots of life on land

Plants have a tough time, even with their chums about
they lack structural support in the thin air and dry out
yet the problem that makes their future truly grim
is how to have sex without sperm that swim

Moss, evolving from algae, displays
two distinct reproductive pathways
where sex alternates with an asexual phase
releasing spores which the wind conveys

If it lands where it's wet, the spore opens its door
and algae-like filaments cover the floor
little rhizoids sprout down, little stems poke through
leaves just a single cell thick have to do
to say they have leaves or roots wouldn't be true
they absorb their moisture like paper tissue

It's only as roots burrow down
in search of new water supplies
and learn to haul it up the stem
developing a circulatory system
that plants fully take hold and rise

Roots sucking in moisture by osmosis will draw
the liquid up a metre but no more
yet trapped in a narrow tube, the water sets
molecule-to-molecule, like tiny magnets
allowing it to rise a significant height
where, with water, carbon dioxide and sunlight
the leaves rustle up a meal and via the stem
the other part of the capillary system
carries the sugary sap down to the floor
to the roots, as food for them or to store

These first vascular plants do best
as they raise themselves above the rest
club mosses, horsetails and ferns that rise
green cables plugging into the radiant skies

Once fertilised, fern eggs prepare
packets of spores which float in the air
and where they land, they sprout
tiny heart-shaped leaves pop out
with male and female parts
and when the waters rise
sperm swim to eggs they fertilise
and the next cycle starts and round they go
until huge tree-fern forests grow

But their sperm still need water to hand
so they can't withstand an arid land
that evolutionary leap comes when
threatened by a drier climate
plants create pollen

Pollen is a tiny male sperm which a seed will enclose
with some starting off food so, when the wind blows
it's whipped up into the air and off it goes
to find an egg, into which it burrows

A plant that bears a seed
will no longer need water to breed
it can embrace even the driest place
its roots will sink into water to drink
while its leaves will face the Sun to feed

The first widely-distributed land-life occurs
in the form of cycads, ginkgos and conifers
next come seeds in burrs that'll grab onto furs
with blooms that entice, with fruits that taste nice
these flowering plants are next to take root
but where are the creatures that gobble up fruit...

On our way up to family day, Denise tells me about her first week on Sister Act. Rehearsals are in north London and the days are so long, she's only got back to Brighton twice. A high powered Broadway musical process, you go from choreography to acting to singing. With productions on or being mounted in six different cities, American producers and directors fly in and out, to check, change, encourage or criticise. It's relentless, cast and crew (that's 70 people) all feel their jobs are on the line. Denise is exhausted, often frightened, but steely, positive.

This is the last full family day for a while. Our kids will still be around. Dandy's college digs are nearby in Wimbledon. But Richard and Karen's are off to uni. Joe, after a gap year, is off to Wolverhampton to study law and criminology. Kate's taking chemistry in Norwich. Plus Denise will be on tour. In fact she's so tired I think perhaps she shouldn't have come today. But once there, with Margaret and Eric looking so strong (since the old ladies' deaths I get little worries), everyone rises to the occasion.

We used to have family day every week. It was music day. Richard and I would give each other's kids piano lessons, followed by family choir. Then it was about kids, now it's about Mum and Dad.

Denise and Karen have been hatching a plan and halfway through the meal they spring it. We'll all spend christmas together in Dublin, where Denise will be performing. Somehow they get it decided in minutes. I can see a few dark looks from kids, a few nervous looks from Mum and Dad. But everyone says yes. So it's done and dusted. Who knows what'll actually happen of course.

10 The Invasion

I imagine there's a deeper innate awareness, call it biological
which senses what is needed on a genetic level, a sensitivity
where one generation informs the next genetically
as each creature specifically
does what's best for itself and its progeny
while holistically, looking back at what life on Earth has done
it seems everything coheres, adjusts, moves forward as one
in a constant process of communication
of competition and collaboration
as bees within a hive will vie
but under attack will unify

Evolution feels its way forward
whatever the opportunity, life will take its chances
if life on land is an improvement or a necessity
that's how it advances

James Shapiro (Chicago University) describes the genome of a cell
as its "long-term information-storage organelle"
where the cell is able to reorganise and rearrange
its own components, structures, its functions as well
thus genetically-engineering evolutionary change

Dr. Grace Wyngaard (James Madison University)
says "copepods reorganize their DNA dramatically
from one generation to the next"
as if acting as both scanner and planner
"they excise major portions, (35 to 95 percent)
of their chromosomes during early development
in a highly precise and regulated manner" while she stresses
that "genomic reorganization is changing
how we think about evolutionary processes"

And copepods are not at odds with the rest of biology
apart from being the most abundant creatures in the sea
they're arthropods and arthropods like these
represent 83 percent of all known animal species
at any moment a billion-billion insects abound
while a million-billion ants are running around

There are 5 kinds of arthropods
including centipedes and millipedes among a group of 'myriapods'
'crustaceans', such as crayfish, barnacles and copepods
'chelicerates', like scorpions and spiders
'trilobites' (all now extinct) and 'insects'
(including moths and other sky riders)

They all develop
from one species
with these qualities
a segmented body
with 'bilateral symmetry'
where left side mirrors right
limbs with joints where each leg bent
enables movement, two limbs per segment
a head with antennae, eyes for sight, a mouth for eating food
a hard supporting exoskeleton, which for growth must be shed and renewed

The first animals to crawl about on land anywhere
are arthropods, a myriapod who first breathes air
half a million years ago
a few million years later, centipedes follow

150 million years go by
before some arthropods learn to fly
insects are the first, yet nobody knows how or why

Their wings grow out like flagella
from their 2nd and 3rd segments, each a propeller
forewings and hindwings, strengthened by longitudinal veins
often ribbed, forming closed 'cells' within the membranes

The greater the body, the more they eat
the bigger the wings, the slower they beat
but no explanation can ever embrace
their miraculous powers of flight through space
their sensitivity is so complex
hovering, tilting, swooping, gliding
depending on the currents they're riding
creating a 'spiralling leading edge vortex'
into which they move, as they course through the air
insects are so light they swim up there

How come insects learn to fly
no one knows but I'm going to try
insects need food and food may be high
so up the rocks and stalks they crawl
but danger lurks on every ledge
the only way is over the edge
so wings evolve to cushion the fall
forever falling from the sky
food and danger may be why
those little insects learn to fly

Or are they so light the wind sweeps them away
and while they are up there they learn to play
or maybe like me they think one day
I wonder if I can fly let's see
they beat their wings and they're up, they're free
that has never happened to me
I'd climb for food, I'd jump in shock
I'd flap my arms and land splat on a rock
but eat or be eaten they're forced to try
so over the eons it's probably why
those little bastards learn to fly

That is how it seems to me
and pollination may be key...

Early seed plants are wind-pollinated
their ovules exude droplets of sap to catch pollen grains
a beetle finds this protein-sugar mix and eats until it's sated
the food's delicious and nutritious so the beetle gains
and it's carrying pollen from plant to plant
more efficiently than any wind could do
it's all a plant needs to fertilise its seeds
so the plant gains too

Plants develop nectar that tastes nice
brightly-coloured blooms that entice the insect
originally, the female carpel's shaped like a leaf
gradually it folds round to enclose and protect
the ovule from some thief
obviously plants are beaten
if, unprotected, their kids get eaten

So insects and plants

begin their great evolutionary dance
as the one evolves wings upon which it zooms
the other evolves nectars and dazzling blooms
and as these two beautiful forms collude
wasps, moths, butterflies and bees arise
for whom flowers are often the only food
while plants specialise and may be seen
to design their perfect go-between

Although some plants are promiscuous
and will take whoever comes and sits
like Canadian thistles who don't seem to care
who's crawling around their bits
it's generally an advantage in the end
to have your own, exclusive friend

Yucca flowers are a shape they create
so only the tiny yucca moth can pollinate
the moths lay their eggs in the yucca bloom
and larvae born in the developing ovary consume
yucca seeds
so each of them breeds
they facilitate each others' needs

Plants that seek to attract a bee
have flowers that the bee can see
mostly yellow or blue with a UV landing guide
they'll even provide a platform to stand on, beside
a small narrow tube which its tongue can fit inside perfectly
snapdragons will only open their petals for the right weight of bee

While nowadays insects pollinate over 65% of flowering plants
some flowers, even trees are served by ground beetles or ants
acacia ants dwell in the hollow thorns
of African and American acacia trees
where the tips of their leaflets exude
deliciously sweet acacia-ant food
in return these loyal ants defend
attack and sting any herbivore
who tries to eat their friend
they even sweep the floor, prune off any biology
that dares to sprout beneath their tree

Leafcutter ants farm a vast dominion
the size of their mounds simply astounds
with populations of up to eight million

Winged females and males leave their nests en masse
and engage in a nuptial flight to breed
each female mates with multiple males
to collect the 300-million sperm she'll need
she has bits of the parental fungus garden
stored in a pocket in her mouth so when
she finds a suitable underground lair
she deposits them there

Four castes emerge
smallest, the 'minim' attends
the growing brood or the fungus gardens
the 'minor' patrols the foraging lines and defends
'mediae' forage, cut and bring the leaves back to the nest
'majors' clear the trails, help with bulky stuff and defend the rest

Older workers, their teeth now blunt, are faced
with carrying leaves or refuse to the dump
which they tend so it'll decay with haste
while bodies of the dead may be placed
around the perimeter of the waste

They farm to produce food
for themselves and their ever-increasing brood but
though they feed on sap, they don't eat the leaves they cut
they take them to a vast subterranean room
with a virulent and highly evolved fungal bloom
which these leafcutter ants feed and groom
for the ants' larvae to consume

To deter unwanted fungal species, they've come
to an arrangement with a filamentous bacterium
that grows on them and secretes antifungal chemicals
essentially the ants use portable antimicrobials
getting their fix of nitrogen
from another specialised bacterium
these leaf-cutters are insects who collude
with plants and bacteria to farm their fungal food

Yet this four-way complicity
is not the exception but the rule
a perspective governs any thesis
humans begin by naming, listing
all of the flora and fauna existing
but once you look at the process
it's all a matter of symbiosis

In the Cambrian explosion of life from 540 million years ago
bacteria, plants and fungi as lichen are first to establish
themselves upon the land, while in turn they nourish
the next to come ashore, the arthropods, the bugs
hard on their tails come worms, snails and slugs
the changes to the landscape are dramatic
as all these different lifeforms flourish
yet vertebrates are still aquatic
in other words they're fish

It's hard for land vertebrates to evolve
there are so many problems they need to solve
there's gravity, air isn't buoyant, they'll need support
while out of water, their senses, sight, smell and sound distort
to be sensate and to communicate they'll need a total overhaul
while some senses, such as the electric sense, will not work at all
furthermore, air is dry, they'll dessicate, their bodily fluids leak out
there's breathing, gills won't do the job, and there's getting about
life on land begs legs, swishing tails and fins are just no use
while the lives of sperm would be utterly blighted
they'd flop to the floor and die unrequited
they can't even reproduce

As time goes by fish swim upstream
but freshwater has its own drawbacks
sometimes water in a lake or swamp lacks
oxygen and that is where, to survive there
some fish evolve their buoyancy sacs
into lungs for gulping air

To deal with freshwater sediments and weeds they need to be strong
lobefins grow bones down their fins to dig and push themselves along
evolving wrists and digits that grasp, that form a claw
until, when there's no food in the pond anymore
they crawl ashore

And there, they develop necks to feed
but they still need to return to the waters
to keep their skins moist and to breed
their amphibian sons and daughters

The great breakthrough
which allows them to pursue
life beyond the pond
isn't neck or toe or leg
but a foetus that can dwell
within a pond within a shell
the amniotic egg

Free from their rich water stores
these 'amniotes' take to the land on all fours
consider the journey from ocean floors
all the way to dinosaurs

When I started this draft around my 60th birthday, sitting in this little white shed in early, sunny spring, I'd a kind of raw energy, born of dread. Do something, I said and exploded into work, in a rage about all this indecipherable scientific knowledge but with a thirst. Then the bubble burst.

Pam and Stella died. I'd intended to keep this 'dear diary' as a personal take, just enough to keep a record. And it suddenly became slit-your-wrists stuff. Instead of being the easy bit, the price of writing it down was that I had to experience everything twice. I dug myself deeper into the science to brace my will, to strengthen my self-reliance until, outside the work, I felt numb, staring at the world vacantly as if I too had died and no one had told me.

Recently I got frustrated again, difficult, arch, as grumpy as I was when I began in early march. With nothing in my life, the work was no fun. It became a bitter pill, I just wanted it done. And then I got ill. When Amanda and Jessie visited, I relaxed, swam, breathed in the summer air. Denise was going off and I had to prepare, had to get some energy from somewhere.

And here it is, I'm suddenly free and it's come from the work, which is now rewarding me. From my eyes getting bleary with the big words in the Big Bang Theory and all the physics laws, to frolicking around with dinosaurs, I've found that I now understand. When new information presents itself to me, even if I don't get it immediately, whatever the subject, I've a key that will unlock it eventually and, given that genetics has its own complex aesthetics, the journey of life to land seems almost bland. And it's been a tough haul, having barely known anything about science at all and wherever this work now has me roam, I suppose I start to feel closer to home.

Now I must pause to turn on the blower and open the doors ready for Peter, who used to seem lost, somewhat closed but who's taught himself to sing and is now laying down vocals on an epic metal album he's composed. Then it's 'Chip', a gay woman maybe 30, in a happy relationship, with a good office job, who sings beautifully, though she feels too shy to perform. Even now, at the end of august, the air is lazy and warm. And I feel strangely well. There's the doorbell.

11 Mouse

The weather's turning, so the weather lady reckoned. Last night in bed I watched clouds hurtling in from the sea, passing the open french windows, across the dark hill opposite, flashing by, one per second. All day racing winds have brought darkness and pounding rain. Now there's brilliant light and it's warm again.

Ten-year-old Max is having a lesson, a week before he's back to school, getting a headstart. He's learnt his piano boogie and his violin piece by heart. He knows he could've taken the summer off but, as he says, he's smart. When I agree, he says "whatever" and begins to sing his song. Max is funny, kind and clever. I scramble to the piano to accompany but as he sings, thunder roars, the heavens open and it pours. Then the doorbell rings and we're grabbing his things, racing through the garden to his mother. I quickly close the front door as they're embracing each other and return to the garden where I'm facing warm, dappled sunlight once more.

Out of the seas and onto the land
early vertebrates with their jointed legs
flexible necks and amniotic eggs evolve and expand
dividing between the proto-mammals and the reptiles
who'll become turtles, lizards, snakes, birds and crocodiles

Meanwhile, surviving in the dry
the first primitive reptiles diversify
squat, armored grazers the size of an ox
splayed-legged, leathery ancestors of crocs
tiny tree climbers searching for insects to eat
vast hungry predators on the lookout for meat
long-necked swimmers with a penchant for fish
omnivores who'll chomp on whatsoever they wish
there are great bipedal carnivores with monstrous jaws
beaked or spiky herbivores with grinding teeth and scaly claws
web-footed needle-toothed swimmers, long-legged lizard-like runners
horny quadrupeds, leaf-guzzlers, toothless bipeds, all of them real stunners

As life explores
beyond the shores
this brave new world devises
creatures of all shapes and sizes
with tons of raw meat on the bone
the fecund land comes into its own
each creature eats, excretes and dies
whatever the hardships, whatever the prize
as layers of rich soil rise, its duty is to fertilise

Reptiles start to build with vegetation
nests in which their growing family dwells
they care for their young ones for several weeks
and communicate with their babes inside their shells
an amphibian may be quiet but a reptile yells

Scales become feathers and the birdies fly
like the insects before them, they take to the sky
as birds explore the air, dinosaurs evolve weapons and physical hardware
while early mammals are making complementary gains, developing their brains

Forerunners, like therapsids, can grow to 10 foot or more
but come the age of the dinosaur, as the mighty reptiles rise
proto-mammals have to downsize and develop their intellects
until, by about 200 million years ago, they're tiny and eat insects
reptiles are diurnal, since they can only be active in the heat of the day
so, the little mammals become nocturnal, to keep well out of their way

To work nights, they need to up what they eat
and turn it into body heat while, covering their skin
scales become a layer of hair, to keep the warm stuff in
with mammary glands, they suckle young, who may appear
in an undeveloped, helpless state, in any season of the year

With their ears pricked and their noses to the ground
their brains grow to calculate every smell and sound
until as jaw bones morph to form the vibrating inner ear
there's nothing in the dark that they can't sniff or hear

A powerful muscle, the diaphragm, divides the torso
for breathing and expelling waste, as specialised teeth
incisors, molars and extra muscles develop in the jaw so
they can digest food very quickly and eat far more, so
with calf muscles, heel-bones and limbs beneath
their waddling days are past
and they're fast

These clever little mammals scurry across the forest floor
developing their skills, keeping away from mister dinosaur
living in burrows, or tree hollows for a million years and more
not much is known about them but their journey has begun
and there they are, biding their time, having some fun
waiting for their moment in the sun

Mireille, a French girl, tall and blond, like a frond of golden wheat, comes in like a dark cloud. I'm teaching her wrong, she's losing her voice, she's singing too loud, it's a horrible noise. I'm trying to calm her, I say I'm doing nothing to harm her. She shouldn't sing loud, just not small. Her voice would float, there'd be no effort at all if she'd open her throat. But she's seen on the internet, on a music noticeboard. It says I must always focus my vocal cord or I get nodule and can never sing again. At this, more thunder and driving rain. I show her the British Voice Association's explanations regarding nodes but she explodes. Our lessons have to end. And she's up the garden path before I know what's happened.

Piercing blue sky brimming with spores
warm bright sunlight on peaceful shores
where hundreds of duck-billed hadrosaurs
graze on laurel and horsetail, excreting manure
mooing through their ornate headcrests to reassure
while those at the edge are on the lookout for
a hungry raptor or tyrannosaur
and keeping away from the waterside
where crocodiles glide

The sea is a mirror, a deep blue veil
broken only by the swish of a fishes tail
a skate perhaps, a ray, or a predator
a shark or a giant mosasaur

Above the surface great flying things
pterosaurs with leathery wings, enormous scaly machines in flight
gliding on currents, swooping out of the light to catch their prey
all in all, a tranquil day

This is a world of mountains and lakes
of toads newts flies ticks worms and snakes
of magnolia blossom and barberry
of conifer ginkgo and sycamore tree
this is a world of plenty

A complex world, where all things cohere
an earthly paradise, a rich evolving biosphere
where lifeforms, separated by their skin, dream
their own particular lives, yet as individual as they seem
they're no more separate than cells within a bloodstream
except of course to the actual beings
it's just a matter of how you see things

And the tiny mouse-like creature with big eyes
peering through the foliage, needs to recognise
any predator that might take it by surprise
the movement of herds, the rasping cries
of fierce pterodactyls in the skies
this furry mouse must scrutinise
just to avert its own demise

Yet it can neither see nor hear
a brilliant shooting star appear
plunging through the atmosphere

The earth trembles, the peace is gone
the water breaks into twisting mosaics
and a dark line forms upon the horizon

Now the tiny mammal is aware
its skeleton vibrates with the shuddering earth and the tingling air
nervous system nervous, head in a spin of stupefaction
while within, its microcosmic inhabitants jump into action
thinking faster breathing faster and every breath smells of fear
triggering the release of enzymes, phagocytes, antimicrobial peptides
as armies of endorphins swarm through its little body, snapping it into gear

As the far horizon seems to leap into the sky
rising many mountains high, the earth shakes
as the great wall of rock, like a tidal wave, breaks
rolling out the darkest night in the middle of the day
everything that can fly, flies – everything that can dive, dives
everything that can hide, hides – everything that can run, runs away

Vast herds of hadrosaurs roaring through woodlands
overhead, the pterosaurs' screeching chorus
great armoured ankylosaurs appear
the kings themselves, tyrannosaurus
crashing through trees in abject fear

Great waves of hot ash fold over the land, blocking out the sun
down through sulphurous skies, incendiary fragments blast back
as creatures, instinctive, helpless, just run for all they're worth
an intense pulse of infrared radiation triggers the next attack
firestorms, hell on earth

Darting through the undergrowth, the tiny mammal flies
noticing everything with its big nocturnal eyes
avoiding snakes and lizards, putting on a spurt
zigzagging away from a stampeding herd
every system on red alert
when the ground judders with footfalls from a monstrous tread
mouse becomes aware that a giant velociraptor looms overhead
the beast plunges through the treeline, gasping for air
suddenly stops, hovers there
then keels over, dead

The tiny mammal leaps away and seeing its goal
skirts a sycamore and disappears into its hole
racing through tunnels of its own design
burrowing down to the water line
where, every muscle aching
it sits there shaking

As the earth shakes, as flames take control
of the land and of each screaming soul
as the forest becomes a burning pyre
the little mammal lies there, curled
beneath a poisonous roaring world
only alive with fire

First dinosaurs are cock of the walk, then suddenly they burn. Now we humans talk the talk but someday it'll be our turn. Maybe we'll even have been the cause, when that day arrives. But whatever happened to the dinosaurs, gave us our lives.

Jacky tells me she's given a performance. Some of her nurses were doing a little show for the patients, so she sang a song. "And they said I sang out of tune. Do I?" I search my mind to find a way through. "I've told you you do" I say. "Yes but I thought, by relaxing and being myself, as you've taught, that it wasn't a problem anymore and now I'm on the floor." I say "I'm sorry this problem has arisen. The thing is, Jacky, you pitch perfectly well, but only when you listen."

To my disbelief and utter joy, Jacky opens her ears, a sweeter, more personal voice appears, completely in tune. I record her new singing and she floats off in a swoon, she's over the moon. And so am I.

With dinosaurs gone
and with oxygen on the rise
there's a dramatic leap in mammalian size
they radiate out to lead very different kinds of lives
as continents diverge and the age of the mammal arrives

There are so many changes as these mammals advance
they form symbiotic friendships with flowering plants
and they're free to develop their own affairs
now that the daylight world is theirs

New habitats form as the continents shift
as the Atlantic is spread by its mid-ocean rift
as India continues its northerly drift
till it crashes into Asia and the Himalayas lift
as America collides with the Pacific plate
until the Andes and Rockies dominate
while overseas, Africa and Europe mate
giving birth to the Alps and Atlas ranges
and all of these changes serve to create
endless new niches
for endless new species

Cats and dogs are first to clamp their jaws
around their ancestral insectivores
while the warm climate allows
browsers to browse

But 36 million years ago
Earth's axis shifts, temperatures get low
an ice cap forms on Antarctica and with less rain
forests turn into pastures of grass and grain
and that all but erases the browsers
now grazers wear the trousers

Grasses love the grazers they support
herds trample and eat the competition
so grasslands and grazers evolve in consort

With all this meat on the bone
predators do well, hunting in packs or alone
only elephants and rhinos aren't afraid of anyone
small rodents burrow, horses, zebras, deer and gazelle just run

Horses run on their toes, but predators need claws to trap
so they make their spine into a whip-like spring
until their front and hind legs overlap
and they'll catch almost anything

Meanwhile, rising from their forest floors
beneath the deep green canopy
tiny insectivores learn to scramble up a tree
arms reach up, thumbs turn to clasp
eyes slide each side to see stereoscopically
while agile minds are inspired to grasp
the complexity required of 3D awareness
as, with the promise of bugs and shoots
eggs, leaves and fruits, they progress
from squirrels to apes, developing traits
that evolve the primates

From arthropods to chimpanzees
the journey out of the ancient seas
is an extraordinary affair
how to get about
how not to dry out
how to breathe in the air
how to reproduce up there
for animals each step represents
a series of staggering achievements

But just as Luca has the sense
to internalise her proton-pumping vents
animals capture their water world within
for their young, in eggs and wombs
for themselves beneath their skin
as the mammalian womb assumes
the wetness and buoyancy of the ancient sea
while the bodily fluids reproduce ocean salinity

As Fritjov Capra says, it appears
that “even after 400 million years
it’s still in our blood sweat and tears”

Halfway through my lesson with Catherine, whose gig is in a month or so, the doorbell rings and I’ve to go. In walk Carol, Duncan and co. On their way to friends along the coast, they decided to pop by. “How nice” I say. “Perhaps Sam will be your host, only I’m teaching. How long can you stay?” I ask, trying to get away. But they’ve a surprise. “Joey and her fella have a daughter whom they’re calling Sara Stella.” “That’s marvelous” I gush, “heartwarming” and rush out through the rain, leaving Sam to entertain. By the time we’re done, working on new fast songs for Catherine’s set, two of which are her best songs yet, Carol and Duncan are leaving. Carol calls back “is Denise still rehearsing?” I shout “one week more” and close the door on a warm tranquil evening.

12 Scales of Circuitry

starting in the billions

4.6^{BYA}

A spark whips plasma up and as it spins
the history of planet Earth begins
just one of the competing planets strewn
about the Sun, whose jostlings create
an impact giving molten Earth its Moon

from 4^{BYA}

When Jupiter and Saturn resonate
great meteors and comets inundate
Earth seethes, few minerals can coalesce
its wild and roiling surfaces express
a steaming brew of elemental gas
as CO₂ and nitrogen are thrust
with clouds of water vapor that amass
until it rains a sea that cools the crust
while down between its rock and water skins
the chemistry of Luca's life begins

from 3.5^{BYA}

While Earth beams out a vast magnetic shield
albeit half the strength that it will yield
the solar wind's a hundred times as strong
tectonic plates increase the Earth's defence
while Luca's babes are now a teeming throng
they're leaving home, emerging from the vents

from 3^{BYA}

The Earth is wracked by hurricanes and storms
the Moon, though edging outward by degrees
still sucks up massive tides while first land forms
the continent of Ur and shallow seas
where cyanobacteria arise
and have to learn to photosynthesise

from 2.5^{BYA}

A thousand minerals spew from its vents
as Earth invests its inner energies
in cooking up new lands for continents
while oxygen is surging through the seas
as photosynthesis releases death
by poisoning its life with every breath
and by inducing Earth's first glacial freeze
so critters who can't breathe will have to try
to snuggle up with those who do, or die

from 2^{BYA}

Upon the mantle larger cratons ride
erecting continents where plates converge
and pushing mountains up as they collide
till Nena and Atlantica emerge
while further glaciations now take hold
with creatures freezing as each ice age grips
until they flock together in the cold
and endosymbiotic partnerships
evolve the first eukaryotic cells
the protists, organisms more complex
with nuclei and special organelles
who speciate via reproductive sex

from 1.5^{BYA}

As the surface cools and life retreats
the planet gets so cold that ice forms sheets
while, trapped beneath the glaciers, heat amasses
till it bursts through with new greenhouse gases
life awakes, starts photosynthesising
burying the gases that are rising
so the surface cools and life retreats
and so on, this phenomenon repeats
yet oxygen keeps rising, making gains
as protists cling for life through arctic weather
till the rise in oxygen sustains
whole colonies of cells that work together

from 1^{BYA}

Baltica and Amazonia
the Kalahari and Australia
West Africa, Congo, Siberia
Laurentia and East Antarctica
with India become Rodinia
surrounded by one sea, Mirovia
while, seemingly, the creatures follow suit
as colonies of protists do so well
they join as one united enterprise
where different organisms contribute
where qualities migrate from cell to cell
with great complicity, self-organise
till multicellularities comprise
a labyrinth of forms that specialise
these multicelled monstrosities that rise
form species that will grow and grow in size

850^{MYA}
(0.85 billion)

The pinnacle of snowball earth now sees
the planet ricochet between deep freeze
and raging epochs, hot and sulfurous
with temperatures of 50 celcius
as oxygen inspires biology
and sponges, dinoflagellates, amoebae
ciliates and many forms of algae
now proliferate within the sea

from 630^{MYA}

The big freeze ends and as the climate clears
bilateral-style symmetry appears
in jellyfish whose left side mirrors right
above the oxygen within the air
an ozone layer blocks out UV light
the land awaits with lakes and rivers there
that wash out calcium to oceans where
evolving life is challenged and responds
by growing corals, shells and skeletons
the pathway of 'bilateria' divides
bequeathing their successful mirrored traits
to bugs who'll wear a shell on their outsides
and those who will become the vertebrates

from 535^{MYA}

The Cambrian Explosion now reveals
a wealth of life as evolution spurts
with long thin conodonts who look like eels
and spiny fish and tiny blue sea squirts
as arthropods morph into grapolites
and 2-foot-long bugs known as trilobites
while in the air four continents now stand
and somewhere the first lichens grasp the land

from 500^{MYA}

Amid ancestral squid as they emerge
within the sea the paths of fish diverge
till some have cartilage and some have bones
ashore the lichens latching onto stones
breed mosses flourishing in wetter zones

from 450^{MYA}

The climate is far warmer than before
Gondwana in the southern hemisphere
is fertile and some plants with roots appear
enticing myriapods up to explore
the wonders of this verdant life ashore

as ray and lobe-fin fish part company
to conquer sea or land respectively
there is a quality they share, a pair
of bladders they adjust for buoyancy
which lobe-fins start to use for breathing air

from 400^{MYA}

With oxygen that billows through the skies
evolving insects, fern tree forests rise
and even fungi grow ten metres tall
as tetrapods, the breathing fish now crawl
from rivers, lakes and swamps on stumpy fins
a new age of land vertebrates begins

from 350^{MYA}

Sea levels fall and this glacial event
produces swamps which bury forests fast
while oxygen's at 35 percent
so catastrophic fires are prevalent
amphibians evolve and they grow vast
with millions of gigantic bugs to eat
the biggest ones expand to twenty feet
the first landlubbers now go walk-about
with scaly skins so they will not dry out
their eggs have shells so young ones will not fry
sharks prowl the seas and insects learn to fly

from 300^{MYA}

A single landmass straddles the equator
arid, hot Pangaea has monsoons
while, adding to its role as incubator
oxygen's incendiary levels
cause the land to burn while life balloons
the roaches, flies and beetles join the revels
predatory dragonflies command
though proto-reptiles, sauropods, inflate
synapsids, proto-mammals dominate
and conifers spread quickly through the land

from 250^{MYA}

As yet we are unable to discover
what prompts this, the worst extinction ever
it's a thirty-million-year endeavour
for the life above sea to recover
all but 10 percent of sea life's gone
and this is the synapsids' great demise
survivors are reduced to looking on
as little mammals, while the reptiles rise

from 200^{MYA}

Just before Pangaea starts to break
a further mass extinction that will take
perhaps no longer than ten-thousand years
annihilates sea creatures in their millions
every conodont now disappears
on land, all the ascendant crocodilians
and many species of the large amphibians
plus any sail-backs like dimetrodon
half the species living then are gone

from 180^{MYA}

America and Europe split, Earth's warm
and hardly any polar ice caps form
sea levels rise and fall, depositing
soft sandstone, limestone and deep-water clays
in swampy forests life is murmuring
renewing and discovering new ways
the air is full of seeds and fungal spores
warm-blooded proto-mammals lick their paws
blood-sucking insects, hermit crabs with claws
newts, salamanders, turtles skirt the shores
but those who rule this world are dinosaurs

from 150^{MYA}

Upon their drifting lands the mammals ride
placental and marsupial lines divide
and go on to evolve in parallel
while plants direct the insects to their store
of nectar with their blossom and their smell
lush swamp and salt lagoon gleam while, ashore
velociraptor, mooing hadrosaur
the dinosaurs' dominion, hot and dry
as archaeopteryx takes to the sky

from 100^{MYA}

Some lands sink beneath the shallow seas
green microscopic algae bloom in these
their sinking skeletons form pure white chalk
as India heads northward by degrees
the bloodlines of placental mammals fork
the rodent and the primate separate
and while it's dinosaurs who walk the walk
the paths of evolution radiate
with conifers and cycads, ginkgo trees
with ticks, ants, termites, snakes and buzzing bees

65^{MYA}

The ammonites and dinosaurs all die
the mammals multiply and birdies fly
a world of grass and grazers now emerges
in the forests, as time whistles by
the lemur and the monkey line diverges
50^{MYA} we now have rhino, camel, bat and whale
as soaring heatwave temperatures prevail
Alaska has palm trees, crocs colonise
34^{MYA} the arctic seas, but lemurs with vast eyes
and other mammals need to tuck up warm
as ice sheets rise and cold kicks up a storm
20^{MYA} the Andes and the Himalayas form

So a brief biog of the biosphere
but what's actually happening here
how to construe it
depends how I view it
and endless perspectives appear

Were Earth a round of cheese
I'd say 'this cheese is appalling
a sight to behold
it's covered in mold
and not just mold, it's crawling'

Were Earth a spinning bauble
I might be spellbound by its spin
watch it zip round the Sun
it's the only one
that seems to be lit from within

Its protective bubble keeps Earth out of trouble
its cool surface conserves its forces
but these economics
are spoiled by tectonics
why does Earth waste its resources

No other planet we know of
is forever renewing its skin
why on earth must
it belch up gas and crust
unless life is also wired in

The mold keeps the surface temperate
its O₂ burns those who intrude
but the mold owes its birth
to old mother earth
who makes sure that her skin is renewed

And as little green cells photosynthesise
they're stealing the Sun's energy
they plunder the skies
so maybe Earth's wise
it's economically-sound policy
this cheese is better off moldy

And the meaning of life for what it's worth
now seems like a simple equation
I'm here to serve Earth
it sustains me from birth
and everyone's my relation
it's a happy situation

While everything fights its own corner
bets on itself to win
without a doubt
it'll only work out
if it finds a way to fit in
"one touch of nature makes the whole world kin"
(Shakespeare)

Denise is in a tizz. She put her earrings on the bed. Could a cat have jumped in and eaten them? Is she serious? Yesterday, during the last runthrough, she fell. She might be concussed. We find the earrings and, loading up her new Rav 4, she assures me she isn't, she's fine to drive. What about you, she asks. Will you be alright? Yes, I say and we hold each other. It's going to be a year or more, but we'll get together every weekend or two. Better to think of it in short leaps.

I wave goodbye and stride back into the house. The temptation is to stop, let go. Everyone's fine. Denise will be staying with the wonderful Frances Kershner, a medical herbalist who'll sort out any aches and pains and put Denise at ease. Dandy's back at her Wimbledon flat, getting set for her second year at college. Sam's busy repairing yachts down at the marina (although he's got muscle strain in one hand at the moment, from hours of sanding). Odd feeling, kids grown up and on their way, Denise back doing what she loves...

Solitude's a luxury, it means I can kick on with the work and, with lessons through the week, a runthrough of Catherine's gig on friday, then the weekend up in Manchester, as Sister Act previews, I've got my work cut out. On the other hand, it's a lovely warm sunday afternoon and this chapter's done.

13 DNA: Do Not Assume

*the ancient Chinese have a word, 'chi'
that means the flow of energy
the life-force which permeates everything
like the rhythm and flow through a body*

There's something wrong with evolution
conceived as a mindless pot-luck game
until wonderful complex humans enter
with conscious mind and noble aim
after all, the fact that we're not at the centre
was Galileo's heretical claim
have we still no shame?

Science would reject as religious visions
suggestions that energy might have ambitions
a mind awash with intuitions
thoughts and doubts and bold decisions
or that forces and chemistry
might behave creatively
– so it has to be seen to do it all mindlessly

Bilateral symmetry, where my left side mirrors my right
first appears in a creature we don't know
after sponges and before jellyfish float into sight
in the seas of over six hundred million years ago

A vital trait, yet we don't know much more
how or why it should happen or what it was for
perhaps "dextrothetism
an episode in some creature's ancestry
when it lay right-side-down on the sea floor"
or possibly "the interaction of some
symmetrizing morphogen"
– come again?

The inherent ability to fluctuate
is one of the mindless mechanisms on which the theory feeds
then, so the laws of evolution state
trial and error will supply all of evolution's needs
so nature has sufficient leeway to randomly mutate
and where this is advantageous it proceeds

But why is it doing anything at all?
why is it building level upon level?
energy, plasma, elements, star systems
a planet heaving with organisms
using each level to support the next
if this is mindless, I am vexed
why do we say it has no powers to invent
when it's so obviously both dynamic and coherent

It isn't just data but insight we lack
reflecting symmetries go much further back
from the exquisite mirrors in microbial biology
back to solar and atomic symmetry
electrons themselves are symmetrical
their polarities diametrical
and all of it is architectural

When a magnetic moment or spin
is present in a crystal
an additional symmetry emerges within
changing the moment's polarity
evolving a new generation of symmetry
and so on, the process itself is a snowball
as in music I recall, one frequency produces all

And this magnetic moment or spin
is where all symmetries begin
clockwise or anti, out or in
each reversal produces its twin
switch polarities and watch them breed
a 'magnetic moment' is all you need
it's a kind of universal seed

Bar magnets and electrons, loops of electric currents
molecules and planets too, all have magnetic moments
(myself I've had a few)

Each spin is quantised by the other spinning forms,
frequency is harmonised, it fits the bill, conforms
from one pitch all are realised
a single note, should it rehearse
may improvise a universe

Bilateralism in me
may be caused by some lazy bastard
lying at the bottom of the sea
but it's one in an endless symmetry

Astronomers have found a nebula
eighty light-years wide
a double helix twisted just like DNA
torqued by magnetic fields deep inside
the heart of our Milky Way

Everything in nature orbits and spins
with the magnetic moment the helix begins
our Moon dances a helix around our Sun
where one orbit, orbits another one
everything spirals, that's how things get done

If biology forms in this energy world
life must be energy too
so now it's the turn of the physicists
to study this electric zoo
and electromagnetic biosynthesis
is what an increasing number of scientists pursue

DNA conducts electricity
so when an error blocks the current
a pair of enzymes lock on
and up the strand goes one electron
if it gets to the end everything's fine
if not the enzyme moves down the line
repairs the error, sorts the mess
in what way can this be considered mindless?

Like integrated insulated electronic wiring
DNA structure is optimised
for electrons to do their firing
hopping, trapping, resonance coupling
whipping all over the place
independent of the base
and this 'energetic control' is universal, they say
for all large molecular systems
as well as DNA

Pulsed magnetic fields promote bone formation
the heart is an electrical pumping station
lungs are pulsed electronically
wherever I look in biology
there's the channelling of energy
from photosynthesis
to brain physiology
I find one word writ large
and that is ELECTRICITY
and I thought I was in charge

The nervous system's an electrical highway
governing all processes and movements, sensing every sense
everything from breathing and digestion to memory and intelligence

Patterns of light on an eyeball fire a constant chain
of little electrical critters, leaping from nerve to nerve
via chemical neurotransmitters, off to inform the brain

Thoughts are electric too
and the mind has magnetic wisdom
each time a neuron fires
the surrounding electromagnetic field
integrates the system

This conscious information field
puts things in perspective
it orchestrates the ensemble
allowing the mind to be selective

Consciousness is awareness
the process of discerning
the interface with the outside world
the experience of learning

Which moves from conscious fumbings
where the field will channel the energy
until, as the neurons fire together
eventually they wire together
and once the connections are wired
the field is no longer required
as the action continues unconsciously

This is not mindless, it is our mind
and humility might allow us to find
that this is a feature of every creature
because it is nature's mind
which gives the appearance
of moving from chaos to coherence
because, unknowing, it is working blind
spinning patterns in time and space
setting up channels, for instance, a brain
to develop its domain
and move it on apace

Carver Mead describes pure energy
as in-phase, one great wave
whereas matter is out of phase
all the little waves behave
got to control the mob
they're there to do a job

And what could their job be
but channelling the energy
this is something I also see
when I look at my body and me

My life is a temporal structure
I don't sit inertly perplexed
obsessed with my spacial structure
but I do figure out what's next

Every so often my body cells renew
while I move on and learn
I'm the experience, the wave passing through
the journey is my concern

I work by trial and error
I am unknowing too
but with such energy as I have
I try to find a way through

We don't just sit and wait to mutate
we actively pursue
we don't just move, we try to improve
and that's what the universe do

Anyway, how might energy just do what happens
when it is all there is
either god creates the plot
or the universe self-organises
either way it's definitely not
an idiot

Physical structures are pathways
DNA is a pathway too
formed by and informing
the energy passing through

So perhaps as the spirit intuits
each possible new solution
it weaves complex systems as conduits
for its own evolution

Energy informs structure
structure informs energy
energy is experience
structure is memory

This relationship between memory
and experience, we call 'mind'
and mind is mind
because it works blind

This is no anthropomorphic white beard in the skies
nor any other fearful or reassuring lies
but the universe is not automatic, that's a pretence
it is extremely dynamic and full of eloquence
and the idea of stealing its intelligence
and ascribing it to ourselves
as the conscious, freewilled summit of all preceding events
is a nonsense

Intelligence does not infer design
nothing predetermined or autocratic
neither inert nor automatic
but profuse and incandescent
restless, curious, reaching forward
it is present

So, summing all this up, I find
an animate eloquent life force
unknowing, working blind
as trial and error will allow
developing its mind
where? – all over
when? – now

“Nature knows only one thing
and that’s the present, present, present,
like a big, huge giant wave – colossal, bright and beautiful,
full of life and death climbing into the sky, standing in the seas”
(from *Seize The Day*, Saul Bellow)

Here is an emotional, sensate world
a creative process for its own sake
a passionate journey, an experience
but what difference does any of this make?

What does it matter how we look at the world
it remains the world whatever we say
it does what it does
yet in a very practical way
it matters to us

Whatever is thought, whatever is said
our perspectives evolve to chase what’s ahead
to intuit our future, to make our best plan
we’ve to understand whatever we can
so how the world is, profoundly matters to man
yet what is ‘man’?

An explosion conjures up a universe, according to current wisdom
call it ‘fire and brimstone’
an exploding star spins plasma into a solar system
that’s fire and brimstone
proton-pumping vents invent a proton-pumping organism
fire and brimstone
time after time volcanic eruptions force life up a gear
wherever we look, from the big bang to the biosphere
the process is clear
so where, when and why
do the humans appear?

Part Three

1 Fire and Brimstone

Thermals warm the sleeping volcano
eyes of a hovering hawk survey
a frightened rodent down below
the great bird swoops upon its prey

An antelope crossing braided streams
her skittering fawn can hardly stand
senses alert to these waking dreams
taking in this glittering land

Curtains of waterfalls that swish
into the deep rift valley below
a diving bird catches a fish
in a cloud of spray that catches a rainbow

Lush rain forest dripping green light
a troupe of monkeys making a din
squawking canopy birds take flight
unseen a python sheds its skin

Sensations defining who they are
among the creatures that live
on a star

Beyond the crashing waterfall
a mineral lake stretches mile after mile
the reflected sun a burning ball
basking hippo and crocodile

Flocks of geese skim a twilight lake
heron wades, snake flicks its tongue
an otter swims to the bank to take
food to its squeaking squirming young

A river flows from lake through hills
of orchards heavy with fruit and fowl
mating calls of whoops and trills
prowling bear and hooting owl

Past groves of thorny acacia trees
elephants mastodons stretching giraffe
pigmy hogs and peccaries
wasps bees rhino and calf

Where the mantle disgorges its molten tar
from savannah to jungle to mineral spa
it is forming and feeding the creatures that live
on a star

While the firece incentives of sex and death
force life into all possible niches
make total demand on every breath
speeding energy cycles through competitive species
unwittingly symbiotic life probes
from mountain peak to ocean floor
on a dizzying pointillist bed of microbes
forged and fed by the star at its core

Savannahs of rich volcanic ash
creatures that chew the grass or the fat
a herd of zebras making a dash
pursued by hyena and sabre toothed cat

An anthill rises from stony ground
a hungry anteater arrives
begins to break open the writhing mound
soldier ants laying down their lives

The river spreads to marshes and bogs
to mangrove swamps that hiss with flies
with orchestras of toads and frogs
all greedy tongues and bulging eyes

This heavy river broad and deep
pours out to where the ocean rolls
where whale calls boom and dolphins leap
where sharks thrash through the frenzied shoals

Fins pulsing
claws perching
leaves tilting
limbs bounding
stems rising
eyes searching
wings beating
hearts pounding
sensations defining who they are
among the creatures that live
on a star

A screeching chorus
a fig tree shaking
an unknown primate
peering through
should your eyes meet
you'd sense at once
your own eyes
peering back at you

And should you ever wonder who you are
you are one of those creatures that live
on a star

Yet, of all the creatures living on this star
the human use of energy defines who we are
whether it's electric power, nuclear or solar
the energy to keep us warm or boil a kettle
for firing missiles or for smelting metal
it's the one unique talent we acquire
we play with fire

Chimps and birds use tools so they're not special traits
we've 'language' but all of life communicates
as for our farming skills, it now appears
ants beat us by some 50 million years
termites, ants and beavers build
our feathered friends are also skilled
while 'self awareness', as a unique property
is unprovable, unlikely and in any case not an ability but a state of mind
whereas our harnessing of energy transforms humankind
to raise ourselves out of the mire
we play with fire

Our understanding's still at an early stage
a century ago, all our scientific knowledge
was based on inanimate, immutable things
where atoms were the smallest beings
whereas now we think in terms of 'doing'
and how things change is what we are pursuing
we now perceive a universe, fuelled by and made of energy
it seems electromagnetic processes are all that we see
we may not comprehend the nature of the beast
nor how it may conjure up a cosmos yet, at least
to raise ourselves higher, gain all we desire
we play with fire

But yell 'fire!' and see what people do
the smell, the heat, it's hell for creatures too
what forces might conspire so we acclimatise
and obtain the skills to grasp our unique prize
what environment might teach us to acquire
the use of fire

Africa is Earth's most ancient continent

Earth is born molten, hatched without a shell
hot blood oozing from the newborn cell
yet its energies are spent
conjuring up a shield
a vast magnetic field
its surfaces begin
to form a rocky skin
so it can regulate its yield
raining down a water bubble
while keeping the planet out of trouble
energy and minerals that burst up through vents
start to raise the land and Earth's first biological residents

And while this hydrothermal process installs
simple electro-chemical circuits in its walls
several cratons are already doing fine
creating Africa's continental outline
the West African craton is evident
the central Congo craton is present
the south, the Kaapvaal, resplendent
Africa is Earth's most ancient continent

As blue green bacteria learn to photosynthesise
as deadly oxygen billows through seas and skies
as prokaryotes engorge their organelles
and as these protists cling together
through ages of arctic weather
to form creatures with many cells
the five African cratons grow and rise

And as if in anticipation, as life is set
to crawl out onto rocks and sand
while some cratons haven't met
and others haven't settled yet
Africa becomes a single land

A land that continues to grow
as dinosaurs come and go
as birds take to the wing
as mammals abound
some on the ground
while high in the trees
shrews morph into monkeys
this, above all lands, is blessed
400 metres higher than the rest
home and witness to every event
Africa is Earth's most ancient continent

Everything's gone just perfect. Sister Act's great, fast and funny. Denise is a superior mother superior, loves cast and crew, is happy. I've sent up her band posters, car documents, and passport details so she can book our Christmas flights to Dublin. Karen's already sorted Mum, Dad and her lot. So it's on. And, these chores done, I'm back at work. Mediterranean weather. I was watching the skies lighten as I dozed in the early hours, and woke at seven to a warm egg-yoke morning. Mandy and Alan are out in their garden, pruning their trees and shrubs. Birds twittering, children playing, garden still blossoming, everything lush. Strange feeling of well-being. I might even bike down to HMV later and peruse their DVD selection.

Africa is Earth's most ancient land
and now a superplume beneath it begins to expand
the Wall of Africa starts to rise, forces pushing it up are so strong
they open trenches down its eastern flank, from north to south, that stand
three-hundred-and-seventy-miles wide and over three thousand miles long

The East African Rift Valley
is a geological wonder
an ocean being born
ripping the land assunder
as the African superplume below
forms the Gulf of Aden, the Red Sea
and all the way down from Jordan to the Limpopo

Subsiding into deep valleys
raising shoulders on each side
the world's largest and oldest rift
is a place where many worlds collide
from the deepest lakes that lie
between peaks over five kilometres high
between this extreme and that
the most varied habitat
spewing up lava with great force
all the way along its course

The forces that lift the East African Rift
like the deep sea vents, provide a gift
a highly fertile and energised zone
a land of fire and brimstone

8 million years ago it's warm
as shoulders rise and valleys form
as lands erupt, as some subside
as this trench opens its shoulders wide
ape and hominid lines divide
and here, us hominids begin
our ancient bones are found within
as valleys spread and shoulders lift
we're created by this rift

About seven million years ago
the trail of hominids commences
with *sahelanthropus tchadensis*
then *orrorin tugensis*
after *ardipithecus kadabba*, up crops
ardipithecus ramidus
australopithecus amanensis
and *kenyanthropus platyops*

Found in layer upon layer of dense
volcanic ash or alluvial sediments
washed down by rivers or lava flows
do these stones belong to these bones or those
are these separate species or is it just the difference
between male and female, age and youth
sometimes there's only a tooth
it's hard to know the truth

But after *australopithecus afarensis*
(from 3.7-million years ago to about 3
and including the skeleton known as 'Lucy')
there are forms of *paranthropus* and *australopithecus*
such as *aethiopicus*, *africanus* and *robustus*

It's said that walking upright is unique
but birds walk upright, so that argument's weak
yet it may be our 'defining moment' as Lovejoy maintains
it develops well before we evolve our 'big brains'
and it does free hands to gather food
to make tools and at least aspire
to play with fire

From two million years ago, all the homos cluster
homo habilis, the 'handy man' with tools to protect us
homo rudolfensis and homo ergaster
followed by homo erectus
and only then – homo sapien

It's hard to see the journey
so much remains unknown
but if any land could lay claims
to have taught us games with flames
it is this African land of fire and brimstone

Mid-afternoon and between lessons, I notice a text from Dandy asking me to call. But after teaching I forget. The setting sun's a deep red and, even on my motorbike in just a shirt and shorts, the air shimmers with heat. Churchill Square is packed with students, just returned from holiday, meeting up with friends to party the night away. I plunge into the shopping mall, mums and kids buying stuff for school, some stores already closing. Better be quick. Even so, it's dark by the time I emerge, roads packed with commuters, but I'm alright. I weave my way through the mosaic of cars, along the seafront, past the pier. Food for supper, a couple of DVDs. Sorted.

As I'm taking the pizza out of the oven, Sam comes through and says that Denise says to phone Dandy. I call her. She tells me she's failed last year's essay unit and has to retake it this year. Fine. But she can't take year 2 till it's done and that'll be next September. I take this in, don't want to overreact, we'll talk. I sit back down. Denise calls. Have I understood that Dandy has known since June? Have I understood that her grant, everything is gone? No. Didn't she tell you? Er, no. I realise I'm a bit angry (well she can't just come back and sit in the loft like she did all summer, she can't expect Margaret and Eric to keep paying her rent in Wimbledon...) but not as angry as Denise is that Dandy didn't tell me a load of stuff. Denise has known since the end of last week and been waiting for Dandy to contact me – she was going to come down and tell you face to face. I don't know why she didn't... So Denise rings Dandy and then rings me back, to tell me how she's laid it on the line. Now tearful Dandy calls, to tell me the things I now already know. I say you deceived us. You should have told us in June if there was any chance this could happen. Which you knew there was. Fuck it, you should've told me from the start, I'd've written the fucking essays for you. Dandy assures me that she has interviews for jobs, she'll make good. I say you don't have anything to prove to me, I love you unconditionally. You have something to prove to yourself. Have you told Sam? No. I get Sam to the phone. He's doing something else, but I say she's got something to tell you, be sympathetic. They're on the phone a long time. I slouch in front of an old Bogart movie. Fuck. She's wanted to do costume-making since she was a girl. The years she's worked towards this. Well, she can continue next year – as long as she passes the essay unit, gets extra help, attends the 2-hour-a-week classes at her own cost... But maybe, as Denise suggested, Dandy's been in education too long, needs a gap year or even... who knows? Denise is right, always right for parents to keep an open mind. What I don't look forward to, is the hands-on parental stuff – can she live here rent-free, do we pay her costs, what's best for her? Not just giving her everything. Of course she may sort herself out, get a job. She never has before. Bogart's just killed the bad guys. I'm off to bed.

2 East Side Story

The process of energy into matter
that magics up the firmament
that magics up life in a deep sea vent
this journey of action into mind
now conjures up humankind

Apes are living in the velvet forests
that spread across equatorial Africa from west to east
until the superplume beneath the ancient continent
begins to change the landscape and the climate
until in the east the forests have ceased

Known as the 'east side story'
the uplift of the great wall is no single event
but a continuing experience throughout our genesis and development
that forms and shapes us, that provides our vital spark
we are delivered into a land of fire and brimstone
and for us this continent is anything but dark

Endless volcanic rifting
ripping open the crust
spewing magma and dust
valleys stretching and drifting
rerouting rivers, as earthquakes
form deep mineral lakes
land rising and shifting
showering mineral wealth that rains
down upon its alluvial plains
as the Great Rift Valley's shoulders lifting
creates a rain shadow on the eastern side which divests
the trees of water which support the apes
who start to lose their forests...

Everything flows
my eyes close and the world becomes unknown
our deep green jungles blown apart
by fists of fire freezing into stone

And as they freeze
still more shoot flaming stars into the sky
and where they fall
a fire wall comes raging through our trees
and so we die

Each time we lose our homes
we search longer and harder to find
a copse of teeth claws beaks and eyes
peering out from branches and leaves
where we've to take them by surprise
and still the forests wither
and the land heaves

Everything flows
my eyes close and I am changing too
in countless generations of an ever changing form
blink and I'm a tiny shrew gliding through the canopy
blink and I'm a monkey swinging on a vine
blink and I'm this heavy thing
on a journey of endless trial and endless error
crashing through the splintering woods
pursued by fire
to this last copse
where our troupe cling on in terror

Fear in mothers' eyes
unable to calm our children's cries
envy the bird who can take to the wing
as earth trembles
trying to shake us out of the trees
if we lose this
we lose everything

One mountain throwing flames
now another even higher
bursting open like blood spurting from a wound
until we are surrounded by a ring of fire
and I think – we must stay and pray
and I think – if I blink it will go away
but a raging smoking ball like the sun
comes rolling through the crackling air
the smell of burning wood
and we are on the run
running nowhere

Blundering through a land ablaze
with thundering herds and howling cats
choking in waves of sulphurous smoke, about to expire
I see myself through the eyes of a hovering hawk
small as an ant in a field of fire

Knuckles mashed to pulp
stop – give up – the body begs
with every poisoned breath I gulp
but the spirit takes over and instead
I throw my weight back on my hind legs
and rocking from side to side as I tread
lengthen the stride, curve the spine
lift the pelvis, raise the head
until I'm running, unaware
of the dying and the dead
just flying through the air
to where the land slides
across the smoking fields
beyond the raging slaughter
rising with the breathless hillsides
to the sight of glassy lakes
and plunging into water
now writhing with snakes
as every frightened creature
lashes out and gives chase
we scramble up the cliff
high upon the rockface
squeeze into a cleft
a cold dark place
so few of us left
and lost for breath
sinking into sleep or death

My eyes close
everything flows
something in the outside world goes
clack
open my eyes and I'm back
but this is a world in disguise
look around
far across a rolling savannah
a hot dry sun beats down
on a baking ground
far below
twisting rivers flow
between trees, a muddy track
where creatures gather
to drink, to ford or to attack
clack

Sound of stones being clacked together
boy on a cold rock floor, nervously eyeing his lame
mother, wondering whether she'll ever be the same
before returning to his relentless clacking game
thoughts dark, brow clenched, eyes black
clack

Safe up here
in a forest of stone
where among our own
we can leap, perch, hide and see
further than the highest branch of any tree
but we can't reach out and pluck a fruit
no substitute for what we lack
we can't eat stone
clack

Down there where the food is
out in the open we are small and weak
no match for tooth or claw or beak
we can't run fast, can't swim or fly
up here we may be safe
but our forest offers no food or drink
and if we stay we die

Roaring down the mountainside, hurling stones and lashing out
animals scattering as we shout, lift the kicking fawn, retreat
dragging it up to our keep, ripping it open, sharing meat
drinking deep, finding sleep

Beneath the surface wrapped in dreams
a spirit world howls and screams
where peaks and valleys rise and fall
where glittering snakes of rivers and streams
switch this way and that
twisted limbs that writhe in pain
lightning flashes driving rain
the rockface grows a fiery mane
roars out like a giant cat
and we unrecognised unknown
between hot sun and freezing stone
need more than these bones and skin
need more than these stones and sticks
if we are to face this seething world
we must learn its tricks

Clack

forge the troupe into a pack
for speed or size and organise
all of us on track, into the surprise attack
knowing our plan and knowing our worth
raining down stones like the exploding earth

After a storm

where the fuming white river
lifts great trees from the banks
we climb down to drink and give thanks
to our gods for keeping us safe and warm
yet all the while failing to see the crocodile
hidden beside a floating tree – until it attacks
and our young girl disappears beneath thrashing spume
we wait in horror for the pink bloom, suddenly arms flail about
strong legs kick out and she's onto the floating log, our daughter
safe and dancing on the water

Just as a child who falls in deep water
will drown or learn to swim
as sure as bone sharpened by stone
will slice through skin
and as an attack will go as planned
if we organise and understand
so rather than drown or burn
we learn

Clack

the hard green lava stone
knocks a flake from the softer grey
I ask if I may see
the boy now grown
rises and hands it to me

Armed with blades like flying teeth
charging down to the herd beneath
armed with antler, horn and stone
stabbing and slashing through flesh and bone
masks transforming the spirit within
buffalo hide and crocodile skin
into magical forms that our gods endow
with spears that plunge and blades that slice
refugees from the trees of paradise
we are the lords of panic now

We search further now, we appear and disappear
along paths across the plains where great herds graze
through mountain passes, gathering roots from here
and fruits from there, small groups of us gone for days

One morning on a mountain track
we face a unknown tribe and fear attack
the swordfish skulls and rainbow shells they wear
make us stop and slowly one of them steps forward as we stare
and places a glittering shell on the ground not a sound on the floating air
and just as slowly the shell is picked up by one of us
it shimmers with lights, so beautiful, so curious

Both sides know the law
if threatened we attack
but travelling across our range
the greatest prize is never war
but fair exchange
feldspar, quartz, ochre, gold
whatever comes to hand
extending networks of our kind across the land

As time like the bird must fly
as mountain peak once capped with snow
exploding into lava flow
as daughters become mothers
and mothers die
as leaders come and leaders go

Young male of the breed
making an early bid to lead
putting on his moodiest glower
rushing through, brandishing branches
displaying all his new strength and power
clutching a long branch we watch him go
skittering down to the lava flow
he dips it in, it bursts into flames
he raises it up and runs, as if he aims
to throw it at us, everyone scatters in shock
but he turns to the cliff and, victorious
hurls it at the rock

He held it above him
he didn't burn
learn

A single flaming branch on stony ground
is harmless enough, we gather round
peer at it, feed it more wood
kneel by it and feel good
worship it one and all
warm come nightfall
safe as we retire
come daybreak
hunt with fire

We descend upon the plain as stealthy as a cat
with flaming torches dipped in fat
we circle the herd as they graze
we set their grass ablaze
we watch the flames rise higher
now we have them trapped in a ring of fire

You hold a burning branch aloft
and way above you, if you can
a stupid ape will not do that
you have to be a man

Back with our kill
around our fireside eating our fill
here in our warm cave come nightfall
the images we've painted on the wall
come to life in the flickering light
that warms and protects us all
and gives us all we want
the devil fire that was our god
is now our servant

Young man drilling a hole through a shell
as a gift for his wife while, copying dad
their growing lad is doing the same
twizzling a stick into soft dry wood
when suddenly, this twizzling game
produces a puff of smoke, a plume of fire
his mother pulls him away, we stare at the flame

Sharpened stone gives us the edge
but with this knowledge, the power of suns
we become his chosen ones, all creatures beware
the ones who aspire, who dare to play with fire

3 Migration

An alpha male rules a gorilla group
no other male may even date
an alpha male leads a chimpanzee troupe
but other males may also procreate
so, what is our social state, where do we fit
what conditions generate the restless human spirit

The mindsets of those forest outcasts need to knit
with all the diverse landscapes they inhabit
whether hunting or gathering, leading or led
standing guard or scouting ahead
possessions, tools or weapons, must be few
everything must be carried, babies too
requiring a good deal of specialisation
clear lines of command and communication
but a nomadic life is beyond control
at any time, anyone may need to take any role
and that's it, out of our forests we do not fit
hence the restless human spirit

Given millions of years of wandering endlessly
compared with just a few thousand in settled states
it's no wonder our nomadic flexibility still predominates
whatever the culture or rules, in any crisis that may appear
any ad hoc group of individuals will instantly cohere
take on different roles and learn new tricks
whatever it takes to fix, we'll do our bit
to serve this restless human spirit

Having been cast out of our trees among our enemies
remains a trauma central to our psychologies
whatever new tools and fire we get
(as a kid, a TV was the best thing yet
nowadays it's computers and internet)
like nomads, we're always on the move
with somewhere to go, something to prove
whatever the reasons for our first migration
war, hunger, climate-change, overpopulation
hooked on constant innovation, our path is lit
by the restless human spirit

There are only two routes out of the African continent
you can travel up through Egypt, though deserts may prevent
or you can cross the Red Sea, via a treacherous straight of water
called the Gate of Scars, to a lifeless land called 'the Empty Quarter'
burning sand and churning seas provide scant opportunities to connect us
with these foreign lands, but it was done 2 million years ago by cousins, homo erectus

Some seventy-thousand years ago
Toba explodes in Sumatra, no ordinary volcano
it's the largest such event in two million years
a thousand-year mini ice age appears
but the world's already cooling into deep-freeze
as glaciers once more suck the water from the seas
we cross on small rafts at the Gate of Scars
carrying blades of obsidian glass

Our successful migration happens just once
and only perhaps 150 humans take this ride
since, of all the daughters of Africa
only the daughters of one are found outside

We hug the coast from Yemen on
we have rafts, we have weapons
we catch fish, we hunt meat
but fruits or roots, we'll eat
any food we can acquire
and we have fire

This beachcomber trail is feint since presently
the path they take, lies beneath the sea
but we can trace their nomadic way
in the DNA of those alive today

The Hadramauts of the South Arabian Peninsula
the Makrani people, at the Indus delta in Pakistan
the Kadar and Korava tribes, the Yanadi and Paniyan,
the Chenchus who hunt for a living, the Irula and Gadaba
along the Indian coast and beyond, the Veddas of Sri Lanka
on the Andaman Islands, between India and Southeast Asia
live the Onge and the Jarawa, while on the Malay Peninsula
the Semang, who still live in caves, while at the destination
all the peoples who are native to New Guinea and Australia
are descendants of this, our first and most epic migration

Having travelled the coastline east from Arabia
with water in the freezer, sea a hundred metres lower
we come upon two great lands, both wonderful
a 'Greater Indonesia' known as Sunda
and an 'Australasia' called Sahul

In an age of ice, Sunda lies in equatorial seas
a vast volcanic land, full of rivers, lakes and trees
and what remains today of Sunda's fertile paradise
reveals canal work and the earliest harvesting of rice

Meanwhile other tribes continue to follow
the coastline of China, up towards the snow
reaching Siberia some forty-thousand years ago
enduring conditions up to 70 degrees below zero

We fish through the ice and with harpoon and spear
we hunt bison and bear, mammoth, fox, hare and deer
we use awls to stitch skins around mammoth bones
for shelter within these treeless zones
following the herds ever higher
with our fire

In 2008 a fossilised finger bone
is found with bracelets and other forms of artifact
and proves to be 35 thousand years old, a homo unknown
neither human nor Neanderthal, yet they must have made contact
since the finger bone is found within sixty-five miles
of contemporary Neanderthal and human domiciles

Many present-day nomads trace their ancestry back to the original migrations
while those west of the Yenisey River derive from European populations
as, around the time the coastal migration arrives in the ice and learn to cope
descendants of the same migration cross the Taurus Mountains into Europe

Neanderthals are larger, physically stronger
and they've been living in Europe far longer
after 200-thousand years, they've taken hold
they're more heavily built, better suited to the cold
and while these are qualities to admire
they also have fire

Intelligent and self-aware
theirs is a no less human affair
one blind, arthritic Neanderthal fellow
his right arm amputated above the elbow
has been looked after and received medical care
another's buried with medicinal herbs everywhere

Nonetheless they have to go
it may be genocide but we share the same niche, so
it's them or us and I, for one, feel we can rejoice
I feel we made the right moral choice

Having rid ourselves of the Neanderthal threat
it seems to take these first Europeans about the same time to get
to their extremities as it takes the epic coastal migration
to get to their furthest destination
across the frozen wastes of Beringia into America
and down 10,000 miles, hugging the coastline all the way
to Monte Verde, in southern Chile

On their arrival in Chile, these sons and daughters of African birth
have populated every possible landmass and almost circled the Earth
crossing the Red Sea, following the coast around the world, instills
a vast knowledge of marine life and formidable maritime skills
right around the Pacific rim, kelp forests hug the shores
with lobsters, prawns, sea stars, urchins and snails
we go rafting and diving to harvest their stores
of bat rays, hornsharks, sea bass, grey whales
worms, crabs, anemones, otters and seals
to make blades and ornaments, skins and meals
that's the beauty of this migration, the sea can supply almost all our needs
we know the original Monte Verdeans dry, store and trade in edible seaweeds

While following water, we're following flames
as King and Bailey's "Tectonics and Human Evolution" claims
the whole route of our migration, from the African Rift Valley
is characterised by tectonic and volcanic activity

Whether from the Red Sea, up the East Anatolian fault to the Caucasus
and west across the North Anatolian fault to Europe's southern peninsulas
or east along the Himalayan fault, the future Silk Road, or the entire
beachcomber route to Australia and around the Pacific's Ring of Fire

These fertile subduction zones provide
our flames, our caves, the familiar countryside
full of cliffs and hills in which we can hunt and hide
while, for the power it gives us, for its power to inspire
we worship fire

We've always had a sense
that beneath the world of appearance
lies a world of inner meaning
just as our words and actions
sometimes reveal and sometimes conceal
our thoughts and inner feelings
so the process of dealing with each new task
each new problem begging each new skill
is informed by intuitive questions we ask
as to the deeper nature or will
the face behind the mask

Where to begin
when each twinkling star is lit from within
when each river carries its own fierce power
its energy, spirit, its will to survive
when even a plant cut from its stem will flower
when the whole wide world is alive

We are the people
we move through a living writhing jungle
starlit spinning whirlpool of creation
we have our own will, our own spirit
our own inspiration
our own energy within
the world of all we see and all we can imagine

A clifftop offers a way to be
like a bird on floating wings
but there is no height from which to see
into the nature of things
we learn by diving in
as children dream and play
so they become – immersion is
by far the quickest way
a surface may simply reflect
only connect

Connect with the spirit of wind that rides
upon the ocean that breathes with tides
connect with light and its every trick
it is magic
the floating bird
the tree heavy with plum or date
lightning, thunder, childbirth and fire
each spirit weaves its own magical state
and fire is spirit incarnate

Caught in the flame the body dances
like a leaf fluttering in the breeze
from youth to age the body passes
like a raft across stormy seas
until one day the body falls
and eyes that shine so bright
suddenly glaze as the spirit escapes
back into the night

Our ancestors peer from the cold rock face
and deep within their voices call
echoing through each hollow space
eye sockets glint from each flickering wall
with blowing reeds and shaking beads
with beating drumskin stretched on bone
we call them back to dance again
within the cave of living stone

This leaf that bark
this drink that dance
through trance to waking dream
that carries us over the borders
through caverns that lead to the underworld
through darkness to light unseen

Through fire that leaps from stone
through water that roars beneath ice
through the jaws of the unknown
through death rebirth and sacrifice
on the endless journey
from hunger and need
to the shores of paradise

We call upon the earth goddess to rise
spirit of birth within her eyes
her great belly and heavy breasts
with twenty-eight drops of blood between her thighs
and three long seasons to pass
for each spirit child to materialise

All insights come first as intimations
ghosts in the cave of the skull
then as clouds will bloom as rain
as the bull will grow his horns
so a breathless glow will raise the skies
as understanding dawns

We coax the spirits we pray we learn
we enter the fire but will not burn
we'll catch the devil by its tail
we'll curse the spirits when they fail
we'll breathe in their life
feed on their strengths
dress in their magic
drink in their powers
until
their skill their courage their will
become ours

We are the people
we move through a living writhing jungle
starlit spinning whirlpool of creation
we have our own will, our own spirit
our own inspiration
our own energy within
the world of all we see and all we can imagine

Up to darling Denise at the weekend, who's very tired. Endless rehearsals and performances. While she takes a long sleep Sunday morning, I chat with medical herbalist extraordinaire, Frances Kershner. Actually she's just retired, aged sixty, two months older than me. I mention my writing project. Her take is that science asks very narrow, reductive questions and I should approach the whole thing differently. She suggests particular books which might help, on chakras and chi gong, which I'm ordering. She also warns me that the intellectual path is limited, I've to experience...

Denise and I walk through the formal gardens at Tatton Park, with its shinto shrine, in the warm afternoon. In the evening we eat at an Indian restaurant with Frances. I notice that Frances is doing everything in her power to help Denise recover her spirits.

4 Gardeners

With tools and fire, we survive – as we migrate, we proliferate
but when farming and herding arrive, we begin a settled way of life
in which we start to dominate – and for this, two things must be in place
nature must provide the right conditions, which we must be ready to embrace

Nomads live at the mercy of the elements
in a search for food and shelter with a sense
of trial and error, facing unforeseeable events
alert night and day and this level of awareness
produces a steep and unremitting learning process
we carry only what we need, there's always a sense of dread
old or sick may fall by the way, the main stuff we carry is in our head
every skill, every scrap of information, whatever makes us deadlier stronger speedier
must be passed from generation to generation, till our minds become the first encyclopedia

The amazing artefacts archaeologists keep seeing
in our early settlements and the skills they infer
have not just spontaneously sprung into being
we've carried that load, learned on the road
and it makes what occurs, occur
following herds will be herding the meat
gathering plants leads to planting the seeds
we are socially skilled and while we compete
we will trade with other tribes to furnish our needs
no other creature trades, it's the bedrock of our empire
forming networks of exchange is as unique as taming fire
as the last ice age melts away until it's warm and wet
as the land turns green and the scene is set

Where Africa, Asia and Europe join hands
at the crossroads of trade, ideas, plans
seeding human development
where every track leads
to a meeting of clans
the territory that spans
the Levant and Fertile Crescent
becomes, as the last ice age recedes
a delicious terrain of parklands and woodlands

Enter the Natufians

Stands of wild barley combed by warm air
herds of wild cattle are grazing there
hartebeest, boar, wild ass and hare
browse in lush forests of oak and pear
on the steppe, goat and ibex skitter up tracks
lined with crocus, grape hyacinth, fennel and flax
snakes slither, lizards crawl and prowling wolves call
great flocks of birds wheeling above it all, come nightfall

Above a bend in the river, where it's shallow and wide
at the forest's edge, campfires twinkle like stars on a hillside
and between the flickering outlines of shelters made of gazelle-hide
supported by ridge-poles and skillfully tied, the tribes now meet
at the seasonal shindig, to talk and trade, to drink and eat
to dance and marry and have some fun
and for the gazelle run

With vegetables and spit-roasted gazelles
served in wooden bowls or in tortoise shells
old friends are reunited, while relatives mourn
those who've died and celebrate those new-born
with more herds, more woods, more fields of grass
come more kids and people stay longer, as years pass
until, across all the lands that lie from Levant to Arabia
from Euphrates to Sinai, peoples and cultures converge
and a new way of life can emerge

Where once we travel a seasonal circle, hundreds of kilometers around
the grain now grows at our doorstep, herds graze the fertile ground
and nestling in the foothills, at the woodland's edge
something new for people, a village

The huddle of homes cut into the earth, in which these people reside
have drystone walls, supporting roofs, clad in brushwood and hide
rush mats cover the floors, and pelts line the walls inside
around the family hearth and its flickering flame
herbs hang from rafters, strings of game
homes built to last by these happy clans
because a new way of life has been found
because the people live here all year round

Enter the Natufians

First to settle, tall and healthy
in fine leather garments with shell and bead pendants
you'd think they were wealthy
they pray to their ancestors, serve their descendants
they know about beauty, they know about duty
working together as a community
and it's more than just work, this is industry

Nearby limestone outcrops threaded with seams that glint
cracked open with basalt hammer-stones to remove long slivers of flint
five blades knapped and set with resin into a neat groove of a bone handle
carved in the form of a young gazelle and used to cut tough stems of wheat
a slick new tool, a sickle
and, with blades inserted into shafts
to make knives or into reeds as arrow hafts
skilled hunters track and trap ibex, goat and fox
stalking deer, snaring lizard, hunting aurochs and gazelles
trading with nomadic coastal tribes for seafood and precious shells

Women snake through a maze that follows well-trodden ways among these
groves of almonds and pistachios, past clusters of lupins and hawthorn trees
where in the shade, the wild wheat grows with turnips, lentils, tangled peas
here are the gardens tended with pride
by those who care for their plants, as they care for the children at their side
for food, contraception, fertility, medicine, fragrance, health and beauty
here are the gardens, these stands of wild cereal, rye, wheat and barley
these groves of nut trees, tended, cultivated and harvested skillfully
with infinite knowledge and understanding for hundreds of years
by these wonderful gardeners, these pioneers

With sickles they slash through the wheat, both for straw and grain to eat
having tied it into sheaths, they turn and tread the rich moist loam
vultures circling in the heat, song-birds feeding on the wheat
as the gardeners of eden snake back home

A young woman squats upon the ground
twirling a stick of wood between each hand
into a softer wood between her toes
adding, for friction, a few grains of sand
a little pile of dust builds up and glows
chucking wisps of grass on the pyre
she has a fire

A fire to heat the hot grooved stone
that straightens reeds into arrows-to-be
fashioning harpoons and fishhooks from bone
sculpting sickle hafts, the village a hive of industry
weaving fishing nets, rugs, crafting bracelets and necklaces
animal sculptures, beautiful head-dresses all with such flair and style
belts and beads of fox teeth and shell, ornaments for their hair
they've Anatolian obsidian and shellfish from the Nile
malachite-beads from who knows where
and among all this exotic stuff
a beautiful carved limestone creation
the oldest known representation of a couple making love

Enter the Natufians
watch them come and go
from hunters of the forest steppe
all the way to Jericho

A fire to cook the food
everyone gathered around
grinding, pounding, shelling, cutting
baskets of acorns and almonds, to be ground
into flour and paste, a brace of partridges needs gutting
fox and hare as well as gazelle and plump freshwater fishes
nuts, legumes and spicy dishes and feeding the fires, stacks of logs
and feeding the work, chatter and woodsmoke
children laughing and beloved pet dogs
nearby, a home has become a cemetery
where an elderly woman lies with a puppy
curled as if asleep, her hand resting on its little body

Ears of wheat, beaten into a bowl with little
red-hot stones and swilled till the spikelets are brittle
crushed in a wooden mortar to release the grain
shaken on bark trays to sort wheat from chaff then back again
to be finely ground in a mortar, kneaded into dough by adding water
cooked on the hot stone bed
and served as bread

Wild ears of grain ripen at different times and spontaneously scatter
but, due to a single gene's mutation, a few ripen together, do not shatter
and these become the domesticated grains, that will 'wait for the harvester'
in wheat, barley, peas, lentils, vetch and chickpeas, the same transformations occur

If Natufians come upon the plants late
when most of them have shattered and scattered
they'll be collecting a higher proportion of the ears that wait
but that's as far as things can go, it's only when you sow
when you take the seed and plant it in a new place
that the waiting ears begin to predominate
that by successive replanting
you domesticate

Natufians cultivate and reap but do not sow
for farming, there's still some way to go
all the way to Jericho

These Natufians are peaceful
no arrows in bones as seen elsewhere
an eden with plenty for all who live there
but all this plenty just increases their population
plants and animals are threatened by over-exploitation
and now the climate reverts, a long cold spell, a drought
the food runs out, a devastating collapse of supplies
just as population levels reach all-time highs
means people can no longer remain
the people are travellers again
the village becomes a shrine
for religious ceremonies
sacred memories

But they can't let go of what they have learned
their fingers burned, their skills are challenged to new heights
as memories of food all the year round pepper conversations
and dreams of fine clothes, fine jewels fire their imaginations
they set their sights
here, evolution acts like a ratchet, where populations
try to maintain themselves in hard times by quick innovations
speeding up the attack so as not to slip back
they develop new weapons, work the domain
learn to be thrifty, carry some grain
make camp by water, wherever they stop
eat what little they have, while some grains drop
germinate and so, transplanting as they go
the first domesticated crops begin to grow

These late wandering Natufians
drift away from parched woodlands
drawn to alluvial valley soils, once immersed in the clear
waters of the Jordan, Tigris, Euphrates and somewhere here
domesticated wheat, barley, rye, pulses and flax all appear

And suddenly after a thousand years of global freeze
in just a decade, temperatures rise seventy degrees
great lakes fill up and rivers flow, great herds roam
woodlands grow and people once again find home
in the Palestinian Hills, where rich fertile soils accumulate
and the mighty river Jordan fills, which these late Natufians cultivate
until village life is reborn far away from the woodland settlements of long ago
and since they sow, they can stay among these verdant panoramas
as Jericho rises and with it, nomads become farmers

Enter the Natufians
watch them come and go
from hunters of the forest steppe
all the way to Jericho

Agriculture also happens spontaneously wherever we go
at different times in different places, farming maize in Mexico
or rice in southeast Asia, it's a path we follow, it's something we do
taming the wilderness and ourselves too, but wherever the neolithic spirit stirs
a radical change of lifestyle occurs, as the once nomadic soul
embraces materialism routine hierarchy and control

Farm work is labour-intensive, with longer hours and poorer diet
sedentary life is repetitive and makes for a narrower mindset
but whatever the downsides may be
control seems to offer safety

Yet this safety is a short-lived bloom
whose dangerous seed is self-sown
now that these material goods are all yours
your home, your possessions, your grain-stores
your cattle, your tools and the land you own
never mind agreements and village laws
how are you going to defend all this

With cities and wars

Last weekend, up north, the weather had already broken. Here it seems warm days will never cease. Roof and windows open, my little Honda Jazz is zooming along the A27, in the bright early morning, on its mission to pick up Don.

Coming away from Catherine's gig last night, I got that strange old feeling, that tingling sense of things moving on. She played and sang like an angel, open, friendly, confident, introduced every act, then did her forty-minute set and remembered to thank everyone, including her 'mentor'. So she's done. Some students come for a while and then just disappear, like banker John Tupper, who went off for a few weeks to help set up a trading counter in the Caribbean... Others, like Catherine, have a fixed goal. Denise has suggested that, since she's earning, I could relax on the number of lessons per week. I think I might take her up on it. Get more writing done that way.

Each time I drive up to Don's Hayling house, I think it may be the last. He put it on the market for 425-grand, but he's lowered it to 375. He doesn't care, just wants it gone now, just wants to move into Carol's. He's doing everything brilliantly, masterminding his future and, at the moment, masterminding our route. I can't remember the way from the A3 to Richard's but Don, who hasn't done it in a decade or more, can. The very fact that he's coming to my side of the family's 'family day', on his own now, without Stella, means he's asserting himself inside himself. For a man whose heart hardly beats, he's full of vigour.

It's full house at Richard and Karen's. She's in the kitchen, cooking. Richard should be back any minute with Eric and Margaret. Joe and Kate are back from uni for the weekend. Sam's coming up by train. Denise drove down last night and stayed at Dandy's. They'll be along soon. The doorbell rings. Everyone arrives at once, piling through the door, filling the living room floor, performing the dance of hugs. Drinks for everyone. Tea for Margaret, Eric wants wine. Don? Oh well, haven't got to drive, he says. Within minutes, the kids are off in the other room, the three oldies in armchairs chatting away, Denise chatting with Richard and Karen.

How are my family? Denise is tired and I worry a little about her health. Don had an angina attack last week. Karen is blue, with her children gone. Sam notices that she's finding the empty house tough going. Besides, both she and Richard are officially 'vulnerable', as Westminster Council are making swingeing cuts. They'll know by Christmas. Sam's wrist has put him off work and anyway, his boss doesn't seem to have enough work for him over the winter. Joe and Kate are enjoying university life. Dandy is in fine fettle. Den is trying to get her a 'dresser' job on Les Mis. Margaret's decline is noticeable, though she's still very alert (if she can hear).

Sitting in the garden after the meal, Denise chats with her Dad and I have a lovely chat with mine, about the process of writing and what we're writing. Back inside, Mum perches on my lap and I cuddle her, while Joe and Sam show her YouTube clips of people having accidents. An endless montage of fatal car crashes and explosions means I can cuddle her for a full five minutes. Nothing like physical contact, especially now that her hearing makes conversation harder. Outside again, Karen talks about things she might like to do, if she does lose her job. Day centres are being shut down. She could start something like that, or a club.

Inside, Mum has risen and picked up her handbag. They must be going. Richard's shrugging, it's either now or in an hour-and-a-half. As their driver, he wants to dodge the crowds coming out from the Chelsea match. Don give me a look. Are we off too? I find Denise. She has a long trip ahead of her. She'll drop Dandy and Sam off at the station. We hug, hold each other for all we're worth. This is our only moment together this week.

5 Cultures of Fire

For light, for heat, for defense and attack
we run with the fire and never look back
we fire pottery, terra-cotta, glass
copper, tin, bronze and brass

The wood we burn, the stones we heat
to cook the meat and veg we eat
for signaling, for corralling cattle
for riding into the heat of battle

For melting and smelting, for pigments and glazes
for writing on clay that is fired, we sing praises
we worship the sun, it is all that shines bright
and in our enlightenment, we see the light

From a fiery temper to sweet surprise
at seeing the lovelight in someone's eyes
it's the spark, the eternal flame as well
as the heavenly host and the fires of hell

There's a light at the end of the tunnel no doubt
and the flame of life, which at death is snuffed out
but with genius, brilliance and flair we are fired
in a blinding flash we become inspired

Fire is always attended by breath
this is the marriage of life and death
spirit is breath, our inspiration
firing the imagination
these are not just word games
oxygen is the incendiary element, it fans the flames

It's everything to which we aspire
with fire in our bellies, we fight fire with fire
it's the difference between losing and winning
and this goes back to our very beginning

Forged as we are by the East African Rift
humans and fire are inextricably linked
a species that loses its habitat
is likely to become extinct

Losing our homes in trees
as strangers in strange lands
we find lava stones and use these
carving the soft lava with our hands
into blades, artificial teeth and claws
to hunt on the plains, we swim and raft
cover ourselves in pelts, develop tribal laws
and, with knives of stone, survive by hard graft

But it's fire that gives us power at last
raising us ever higher, it changes our role
and with the ruthless mindset of the outcast
we use it to control
until mankind no longer roams
building habitats where cave-like homes
are planted side by side like our woodland trees
and we're safe in the manmade forests of village communities

We don't just settle, we mark our arrival
with the wary outsider's fierce disposition
at war with the world, fighting for survival
nervous, ruthless and fired with ambition
for light for heat, for defense and attack
we run with the fire and never look back

When a single tribe or a family sets up a homestead
they organise themselves, they don't need to be led
but as time goes by and whole villages have grown
land, cattle and belongings come into their own
and a higher level of administration takes root
to organise, keep the peace and settle dispute
maps of who owns what, are etched on stone
and village priests, the elders, form the core
of those who oversee the economy
the political and spiritual unity
serving the way of the village
the village 'lore'

But other tribes will plunder, so they need
a strong man who'll defend them with force
a commander, who is tough enough to lead
under the auspices of the elders, of course

Village life is the real deal
it produces more wealth than anything we've seen so far
and the more people, the more protected we feel
so all in all, the bigger, the better they are
the more we're fired by what we lack
and so inspired, we never look back

One vital wealth-producing innovation
involves building systems of canals for irrigation
which vastly increase the amount of crops we can plant
such an enterprise requires large organised workforces
but towns that can create these water courses
win over towns that can't

Over five thousand years ago
Eridu Uruk Ur Umma Lagash Shuruppak
the first great cities of Mesopotamia grow
and surviving attack, this first land of cities thrives
until it arrives at a point, some four thousand years back
where ninety percent of those in the south are living urban lives

Uru, as in 'Uruk', 'Ur' and 'urban', means an area that's walled
this face-to-face communal place, where different peoples throng
has everyone enthralled – and they're big, the city called
Uruk is fifty-thousand strong

Yet the city's a cauldron, for all its fun and revels
for all its opportunities and wealth, it raises anxiety levels
around every corner lurk unknown dangers
we're reliant upon the laws of others
lost in a maze with wall to wall strangers
who don't care for us like fathers and mothers
in a sense we're defenseless and when night falls
alone in a crowd, anonymity calls
as fears and anxieties rise with the walls
and this nervous energy keeps us on track
aspiring upwards we never look back

"They are one people and have one language
and nothing will be withholden from them which they propose to do"
so says Genesis and it's true, their ingenuity and organisation seldom fails
the babbling Babylonians create social structures on vast scales

Cities are all about organisation, hierarchy and specialisation
they come in three sections, where the inner city has its own walls and within
the priests and wealthy, with their strong man, Lugal, and pontifical couple, En and Nin
who take care of the city's security, social justice, religious purity, taxation and administration

And around them spin
suburbs with gardens and cattle pens
that provide daily produce for the citizens
and the commercial centre where deals are made
where both native and foreign merchants live and trade

City life revolves around the temple, seat of all powers
with its ziggurats, stepped platforms and terraced towers
from which the elite, an elaborate cult of movers and shakers
control a vast feudal industry of specialised brewers and bakers
spinners and weavers, merchants, jewelers, costumers, woolmakers
laundrymen, builders, ornamental gardeners and those who dig graves
barbers, ferrymen, troubadours, artists, administrators, thieves and slaves

Pursuing careers sparks our imaginations
vastly increasing the number of innovations
the next gizmo to sell, the next problem to crack
we run with our creations and we never look back

Some eleven thousand years ago, in Jericho
an accidental firing while cooking, turns clay into pottery
from bowls and bricks to ceramics, the kiln becomes a laboratory
and raising the temperatures ever higher, we learn the ways of alchemy

Malachite and azurite are common pigments for craft ware
while deep-blue lapis lazuli is most prized but most rare
it must be carried a thousand miles by trading caravan
across the wild deserts from the peaks of Badakhshan
yet by placing malachite and azurite with the clay
in a white hot kiln, pumping air in for a day
what emerges from the furnace
has a shiny deep-blue surface
like lapis lazuli, almost ethereal
it is the first man-made material

That heat will transform is profound, stone is easy to work when melting
but this magical alchemy is crowned, when fire transforms the stony ground
into molten metal by smelting

Malachite is a copper carbonate, extracted from local rock
perhaps a potter overheated his kiln and got one hell of a shock
to copper add ten percent tin and a much tougher metal is forged within
and so, some five thousand years ago we see the bronze age begin

Fifteen hundred years later, on the shores of the black sea
the Hittites learn to smelt iron, a process they guard with great secrecy
for the forging of metal is magic and throughout the city, the sound of the smithy thunders
for he can work nature's wonders
whatever it is, once we've the knack
we run with it and we never look back

From ten thousand years ago, pictograms are found
cones for grain and so on, marked on tokens of fired clay
used by merchants to account as they move the goods around
they develop the first written language, known as 'cuneiform' today
and, moving from the symbol for the image, to the symbol for the sound
alphabet and syntax grow until the writing's fast and can express what people say

For the first time we hear people's voices, even as they dream of independence
here a student writes "this is the monthly scheme of my school attendance
my free days are 3 each month, my religious holidays are 3 each month
for 24 days each month I must be in school, how long they are"
scripts record events, accounts, religious text and memoir
but these are only part of what writing is for
the party of the first part is the law

The epic of Gilgamesh, first of all our great literary offerings
tells of the battle for power between the priests and the kings
if the Lugal wants to go attacking, he requires the Pontiffs' backing
but if he should succeed in conquering another state, the pontiffs fall
for the strong man, king of both, is no longer answerable to anyone at all

Having transformed his city state into an empire, King Hammurabi
presents his Code, with some 300 laws, concerning property
trade, wages, slaves and family, military and religious duty
the Code applies to all: slaves, privileged and citizenry
finding safety in laws, protecting our stack
cooking the books, we never look back

With the strong man's rise
the city becomes a military enterprise

As the day of the priests, the elders, draws to a close
the human psyche passes from the spiritual to the worldly
as the sacred realm of nature and fertility goes and a mighty
pantheon of promiscuous and warring human gods emerges and grows
we pass from communal complicity to hierarchy and the worship of great heroes
with wheels and axles, with armour and shields, and fired with ambition
with chariots, swords and fiery steeds, these are gods on a mission
and civilised by law, our cooped-up aggression can pour
through the organised channels of glorious war
while safety and laws may be all we desire
with cities come wars, cultures of fire

Each family makes its own tools from stone but metals are costly things
copper and tin must be mined and brought in
this is a sport for kings

There's no glory in fighting with stones but when you've a sword in your hand
you parry and thrust and your foe bites the dust
it's heroic and gallant and grand

Add tactics and organisation, commanding the column and line
with riders and marchers and flamethrowing archers
everything's going to be fine

“Gilgamesh laid the matter before the Elders
“let us not submit to the house of Kish, let us wage war!”
the assembly of the Elders answered Gilgamesh
“let us submit to the house of Kish, let us not wage war!”
Gilgamesh, placing his faith in the goddess, Inanna
took no notice of what the Elders had said
but appealed to the city's young men
“let us not submit to the house of Kish, let us wage war!”
the young men answered Gilgamesh
“let us not submit to the house of Kish, let us wage war!”
Uruk, smithy of the gods and fertile Eanna
who give form to all things
you are their king and their warrior
o crusher of heads...”

Where walls go up, warfare will rise
the once secure city is now the prize
with cities come wars, cultures of fire
while safety and laws are all we desire

Each city state battles each city state, right across the then fertile crescent and beyond
from Sargon of Arkadia to Alexander the Great, these hero gods wave their steely wand
cutting a swathe through the heart and mind of humankind
wherever city states appear, from Atlantic to Pacific shore
all across Eurasia, the humans go to war

Safety and laws are all we desire
with cities come wars, cultures of fire
while safety and laws are all we desire
yet more cities more wars and still we aspire
to more laws and wars and more cultures of fire
and however black, we never look back

As a species of dispossessed nomads
create the world of the warring state
a warrior species, at war with itself
2000 years later, things aren't so great

Something has to give and it does
in a moment a new kind of law
from Europe to China, people's cries
cause all the great moral religions to rise
from the wastelands of suffering and war

Denise calls me in tears. Apparently Stella's ashes are to be buried in a casket, with a plaque, in her parents' grave – today. Danielle and Philippe are here from Switzerland. Only, Don forgot to inform Denise, or any of our side of the family. And Den has a matinee, she can't go. I try to console her and within half an hour I'm in the car, driving to Hayling.

At the cemetery, all Carol's lot are there and Dandy arrives. We cluster around the grave. Two of the little children strew leaves and blossoms around the casket, then each of us throws in a clump of earth. Dandy throws in a second for Sam, I do the same on Den's behalf. Carol is beside herself over Denise's absence, she didn't check Don's invites. She won't throw in a clump of earth, she'll wait. She'll come here with Denise and they'll plant flowers. Don is in a terrible state as the plaque goes over the top. Joanna introduces me to her newborn, Sara Stella. One in, one out, she quips. We wander away between the graves to our cars.

Our cars snake through Hayling's lanes to the bright, Mediterranean-style Inn On The Beach. Twenty of us sit around, staring at our menus. Don is quiet, keeping his own council. He doesn't know what he wants. All the pretty young women gather round, showering him with love. Wouldn't he like the roast, the beef? Yes, he'll have that. He and Eric are my two wise men. Keith is my third. He phoned to invite me to Lalla's do next week. He's been on radiotherapy and I asked him how he was. Pretty terrible, he said. The treatment has damaged my heart and lungs.

The meals arrive. So Paul, how are things in your neck of the woods? Duncan asks.

6 Way to the Light

An ape sits alone
gazing at a waterfall
far away look in the eye
just as we begin with wonder
wonder what, wonder how, wonder why
and since the answers are unknown
the word like the ape sits alone
far away look in the eye

A small tribe travelling through a living land
one creature among all the rest, living on our wits
alert to every small vibration, sensing, listening, seeing
knowing we must understand the nature of these spirits
for the spirit is the nature of the being

Of the many ways to live, this must rate
as the most connected, the most sensate
since everything here signals life or death
every glint from the sky, every cry from the trees
every sound from the earth, every breath on the breeze
and all that they do, comes vibrating through
a stream of messages, until the head teems
and if they are spirits then we're spirits too
in a world which we inhabit in our dreams

Entering the cave we leave the outside world behind
as passageways lead down towards the cavern of the mind
where spirit eyes glint from walls, lit by flickering torchlights
down to breathless cathedrals of stalagmites and stalactites
where mushrooms and fungi in their own dark fertile place
unleash the shackles that bind, that hinge the mind
until we reach a state of grace where we embrace
the unknown, deep within our cave of living stone

Nothing stays the same
we are spirits in the flame
as reality keeps changing faces
changing times and changing places
in a trance we're change itself and unwind
as brainwaves in the cavern of the mind
we dance the dance of humankind

But when we land and first touch base
when we farm, the world we enter
becomes a very different place
where we are at the centre
and the seasons go round
our land of farm and field
and we pray for sun and rain
for ewes to lamb, for crops to yield

Now divinity materialises and takes a human form
the great Earth Goddess of fertility keeps us safe and warm
in whose belly all creation grows and as she opens her legs wide
gives birth to the Bull, her consort, virile, rampant, yet ever at her side
a female being of the breathing earth, the round sky, the waters that flow
who watches over the waving wheat, the cattle in calf and the seeds that grow
fruitful, fecund, a vision of milk and honey, a feminine vision in a land that is sunny
where men herd and women sow, as venus figurines all over the Middle East show

The great goddess is creation herself, perhaps the most wonderful idea of all
the wonder of birth, the farming year, the cycles of life that rise and fall
represented as a woman, yet a woman who can rearrange
her body into any form, as variations on a theme
a tree a stone a butterfly a constant stream
of life and change

This goddess with her parted legs and pubis forms the shape
of the letter M and here she dwells within her sacred landscape
here, where this central ridge slopes down from higher ground
where the valley spreads below, where hillsides wrap around
where geodic currents flow, rings of phallic stones stand tall
here at midwinter solstice, the first shaft of light will fall
through a slit in the inner circle at the centre of it all
where everyone gathers to welcome the dawn
as a new year begins as the sun is reborn

Yet nothing stays the same
we are spirits in the flame
as reality keeps changing faces
changing times and changing places
in a trance we're change itself and unwind
as brainwaves in the cavern of the mind
we dance the dance of humankind

Until in time this goddess needs protection
our land grows walls and with their erection
our mother earth must birth a new creation
a pantheon of power-hungry heroes of the city
as goddesses sanctify the lords of war and annihilation
from Mesopotamia to Mount Olympus this virtual Hollywood grows
with the glorious tales of its gorgeous women and their conquering heroes

The natural world with its nature spirits and its goddesses of fertility
is washed away and what wins the day is military ability, a mentality
spun by the ruling one, a tale where supremacy is the only reality
an endless bawdy epic that inspires the human cattle into battle
endless propaganda, two thousand years that celebrates
almost constant warfare between all the city states
blessed as we blunder, from wonder to plunder
obsessed with the sound of our own thunder
until we've split our world asunder
and we in turn go under
just spirits in the flame
yet nothing stays the same

My first sight of Keith is him pushing Lalla in her wheelchair up a deserted Drury Lane. At the Sarastro, all the usual suspects have gathered. Except that Jonny's in New York about a book he's written and Sara and co. haven't made it over from Ireland. David's family (Judith and the kids) are in Germany. So, of Lalla's siblings, only David will be here. Lalla keeps asking about him. Finally Dandy, who's looking after her, finds out that David has flu and isn't coming. Lalla is distraught. None of my brothers and sisters are coming, she sobs. Dandy, Denise and others cradle her. We're no substitute. I'm sitting between her and Margaret. I cradle Lalla in my arms, telling her how I'd cradle her in my arms when she was a little baby. With love around her, she recovers a bit.

Meanwhile Margaret, to my left, is telling Eric she wants to leave (food hasn't even arrived). I don't know why. Possibly because Eric is in happy conversation with a pretty middleaged woman opposite, called Jeanette. Possibly because it's noisy and she can't hear what anyone says. Her fingers, she says, are freezing. Eric is lovely to her. I watch him gently calm and reassure her. I take Mum's hands and massage them. She tells me my hands are warm, warm as an oven. Anyhow, food arrives and, with it, a string quartet, followed by two sopranos with loud wobbly vibratos. When they strike up the Merry Widow theme, Margaret whizzes past me to join Eric for a dance.

The party ends quite suddenly. Lalla wants to go and Keith will take her. He goes to pay. Mum and Dad's cab arrives. I see them off. Keith and I hug. We'll catch up some other time. There have been fifteen years of parties for Lalla here, he says proudly.

Denise and I go our own separate ways, in our own separate cars and arrive home in Brighton at the same time, parking up beside each other, going indoors, settling in front of a TV and taking in a movie. How lovely it is. Last week all we got was a kiss by the door at Richard's. And we have the whole day tomorrow.

In a single generation or so
the roots of moral systems grow
two thousand five hundred years ago
the Axial Age may be our most critical stage
where what is best becomes the quest
to awaken some degree of sanity
to combat human inhumanity

Confucius wandering through the Chinese states is dismayed by the greed
insincerity, irresponsibility, callous disregard for anyone else's need
and commits himself to trying to inspire "goodness" to occur
Confucius, 551-479^{BC}, is China's first moral philosopher

"Do good to others, to your family
and to your greater family, society
the highest virtue is perfect goodness"
where "benevolence, humanity, human-heartedness and nobility" all coalesce
in "deep concern for others, which makes doing the right thing effortless"
an extraordinary teacher whose words hold sway
in his own time and right up to the present day

Lao Tze's 'The Way' (about 500^{BC}) redefines what is real
it scorns human conceit, both in success and in defeat
"do not value rare treasures and people will not steal
do not honour the worthy and people will not compete"
know yourself, know compassion, above all, do not fight
every word an attempt to stop men's heads from spinning
for "how could man delight in the slaughter of men
the world is beyond the winning"

Siddhartha Gautama (563 – 483^{BC}), the Buddha
travels throughout the vast Gangetic Plain of India
talking with everyone, from outcasts to nobles at court
saying "all we are is the result of what we have thought"
this is 'karma', from an evil act or thought, pain follows
while from a pure act or thought, happiness grows
he says that only with love, will hatred cease
"better than a thousand hollow words
is one word that brings peace"

They all say do not fight
do only what is right

In 603^{BC} the Babylonians take Samaria, Judah and Galilee
the Jews lose their Promised Land of milk and honey
in exile they write down the Torah, their history
these people worship a single god, Yahweh
which just means “I Am”, the all in one
creator of earth moon stars and sun
where we do as we should
for God is good

Despite this good news
Yahweh is exclusively God of the Jews
five hundred years on, Christianity will seek
to convert the heathen and Jesus will speak
of compassion, of turning the other cheek
and Islam, some five hundred years later
will name Allah as everyone’s creator

Each of these creeds unifies its lands with a vision grander
than valuable things and hero kings to whom people must pander
these new religious creeds are counter-propaganda

Do not fight
do only what is right
regain the spiritual domain
it is the path of enlightenment
the binding spirit of the firmament
the God whose truths are heaven-sent

Athens, in 505^{BC} introduces democracy, a radical political innovation
to stop leaders called tyrants who for centuries have ruled Greek cities
“it is called a government of the people because we live in consideration
of not the few but the many” so says Thucydides

And here, secular science, mathematics and philosophy begin with logic
as these Ionians grasp that the cosmos is not determined by magic
at the whim of Olympian wars or the godly rutting season
you can learn what makes things tick
if you reason

Here the matter/energy debate starts with Heraclitus saying ‘all is flux’
while atomists maintain that fundamental particles of matter form the crux
flux flies east, matter marches west, like two ribbons around the world they go
until , two-and-a-half-thousand years later, Einstein ties them back in a bow

Greece develops mathematics and ethics
rhetoric, metaphysics, drama, aesthetics
political philosophy, ontology, biology
whilst, living between 582 and 496^{BC}
Pythagoras hails the immortal soul
and if true, it matters what we do
save your soul, apply self-control

Do not fight
do only what is right
regain the spiritual domain
it is the path of enlightenment
the binding spirit of the firmament
the God whose truths are heaven-sent
reason, logic, justice, the people's government
any trick to circumvent a blood-thirsty establishment

In Rome the last king is overthrown in 509^{BC}
instead, from now on, two Consuls are elected annually
who face prosecution if they abuse their powers or take bribes
in 494^{BC} the Plebeian soldiers refuse to march against enemy tribes
unless given some clout, these are the 'plebs', the people, who cause
the election of Tribunes, who have right of veto on the passing of laws
from kings to elected body politic, this is the start of the Roman Republic

Cities breed hierarchies, injustice, greed, the need to rise above, to find a way
to succeed and every attempt to temper this fails and continues to fail to this day
compression excites – whether atomic compression or auroras seen on clear nights
as the solar wind squeezes our atmosphere and creates the northern and southern lights
so people compressed behave the same, they'll raise hell, sell their grannies to reach the top
and there comes a point where a calming force is required to stop the whole thing going pop
religious and intellectual pursuit tend to stop people sticking in the boot, as they aspire higher
while the warmth of godly love may ward off the desire to fight fire with fire
and these forces appear spontaneously
around 500^{BC}

The synchronicity of the Axial Age remains a mystery
yet it is the most deep-cut dividing line in human history
Confucius, Lao Tze, Buddha, Isaiah, Pythagoras, are brothers
searching for a better world at the same time
without knowing of the others

Do not fight
do only what is right
regain the spiritual domain
it is the path of enlightenment
the binding spirit of the firmament
the God whose truths are heaven-sent
reason, logic, justice, the people's government
any trick to circumvent a blood-thirsty establishment
but essentially that the divinity of infinity
is available to you in your vicinity
in your neighbourhood
do good

It's a spiritual breakthrough, the moral soul
the modern individual seeking an inner goal
it may be mystic, it may or may not be realistic
but of all ideas, it's certainly the most optimistic

Morality, philosophy, faith, science and democracy
these are the kites we fly to survive our own thunder
as each new empire's torch is lit, as ideologies are split asunder
an ape who senses all, is gazing at a waterfall
and we can only wonder

Bright chalk cliffs as we walk Smilah along the beach path at Rottingdean. Pebbles and rocks, wheeling birds, sea and sky. A parade of families and friends, tiny kids on tiny motorised scooters, couples on cycles, all out taking the air.

Our favourite restaurant, the biker's cafe on the beach, just in front of Brighton's new Eye, does a mean whitebait and chips, with a Greek salad on the side. Only other things you need are a pint of beer, a warm sunny day and you can watch the world go by.

From the top of the Eye, you look down on the tiny little people below, look over the city and out to the glittering sea. We giggle like kids. Denise takes pictures and, back on earth, we tootle off home to watch movies.

I'll see Denise next week, but then not for two, while she's in Edinburgh. However, the week I won't see her, there'll be family day. So, I'd better make use of the weekdays if I want to get the next few chapters done.

A series of huge empires span Eurasia, from China west to India, from Egypt on to Rome but, the more I research it, the less I know how to look at it. The process of learning just seems to flow. They bounce ideas off each other every which way.

So anyhow it's a mess in my mind. The movie's finished and Denise has fallen asleep with her head in my lap. This has been the brightest year and the darkest. Warm sunlit spring, summer and now autumn. Bright when Pam died, when we buried her. Warm sunlit days as Stella died, at her funeral and last week when we buried her ashes. And still the bright bright days go on.

7 Silk and Spice

The story so far is clear enough
dispossessed apes make tools and fire
settle the world, defend their stuff
raise their battlements ever higher
a process that ends in a constant fight
forging ideas of wrong and right

Does progress mean ever vaster empires
leading to globalisation
or, from tools and fire, the rise
of technological innovation
is it living together and doing what's right
or is curiosity the guiding light

The ethics of the axial age
do not deliver peace
ideals lead to quarrels
morals rest on their laurels
as the scales of conflict simply increase

Cultures are vibrant when they begin
but as soon as they've won what they're going to win
they get too comfortable in their skin
are attacked from without or rot from within
got to keep spinning for heaven's sake
answers sleep while questions wake

Innovation is fire and breath
that fans the flame of humankind
I'm walking a path through places and conflicts
moments which spark the questioning mind...

Lady Si Ling-Chi
wife of Emperor Huang Ti
is sitting saying pardon
in her garden quietly
when a cocoon from the mulberry tree
drops into her glass and unravels
in the warmth of the tea

Lady Si Ling-Chi
wonders what it might be
so between thumb and finger
she unwinds it carefully
and holds it up to see
an endless gleaming filament
that sparkles prettily

Lady Si Ling-Chi
calls to hubby Huang Ti
and they marvel at the beauty
from the worm that spins its silken thread upon the mulberry tree

Huang Ti's mind begins to whirl
and the Yellow Emperor
sends out an order
to cultivate white mulberry
and its blind flightless moth
to make fishing lines and twines
to make music, to make cloth
for, of all materials in the world
none is finer
than the silk that casts a web across
the vast secluded lands of China

Bounded on all sides by a natural defence
where oceans mountains deserts
defend its magnificence
China grows a dazzling culture
with a divine emperor in residence
a great feudal and spiritual domain
which looks to the heavens for coherence
dividing the sky into 28 mansions
and studying celestial events
until patterns of nature
and patterns of life
reveal a deeper significance

Chinese are the most accurate observers of the stars
anywhere in any land
whether it's the nature of eclipse
the paths of planets or comets
they record, integrate and understand

They see that opposites reflect
that negative and positive polarities connect
that there is symmetry to everything
that, along a line from yin to yang
music is a resonating string
that, subdividing progressively
on a ratio of 2 to 3
reveals the nature of harmony
as all 12 notes, vibrating
sing in sympathy
3 thousand years ago
the Zhou court establish a Music Bureau
and produce 'The Classic of Music'
'The Book of History' and 'The Book of Poetry'

Only a balance of forces will keep a body pure
so medicine has its beginning
with the study of herbs, the trigrams of I Ching
the meridians of acupuncture
with the world's oldest medical textbook summarizing
physiology, pathology, diagnosis, treatment and cure

After the Golden Age of Thought
the humane values Confucius taught
are crushed, first by wars
then, as the Qin Dynasty arrive
the books are burnt
and 460 Confucian scholars are buried alive
amid brutal laws and punishments
the Hundred Schools of Thought fall
and the world's greatest monument
to national defence
rises with the Great Wall

A dazzling world of creations and destructions
first to cast iron
first military manual, the Art of War
crossbows and hot-air lanterns that soar
the first to print, to discover paper
the magnetic compass
and gunpowder

But it isn't gunpowder
 blasting its way from shore to shore
that announces Chinese culture to the world
that feat is accomplished thousands of years before
 by the women who weave the silken twines
 who cast their threads like fishing lines
that draw western men with their heavy loads
 along the paths of the ancient Silk Roads

Anyone smuggling eggs must die
and though there are ever more spies about
 the art of the silk worm remains unknown
 the silk, however, gets out

Over treacherous mountains across flaming sands
 bartered at water holes with grazing lands
 that grow into towns as trade expands
 with the silk forever changing hands

As horses and camels are captured and tamed
 wheels and axles invented and framed
 into caravans that pull and push
 from the Gobi Desert to the Hindu Kush

Few have the strength to travel its length
 storms and wars may arise, bandits and kings
may steal all your things and no one even knows its size

It is four thousand miles of merchandise
 where each exchange ups the price
of copper and tin from the mines of Iran
 lapis lazuli from Afghanistan
 flowing into China with riches untold
 caravans laden with silver and gold
returning with hemp, silk, satin and grain
 with perfumes, medicines, porcelain
with jade and braid and black-eyed peas
 bronze, bean curd, iron and cheese
 furs and the seeds of almond trees
back and forth down the centuries
 sages, pilgrims and missionaries
 spreading ideas and technologies
cultures, religions, slaves and disease

As tributes and tolls fragment the track
new passes are found and new routes made
till the network of silk roads forms a vast fabric
spinning through Russia, Tibet and Iraq
and linking into the fabulous Indian spice trade

Where the fabulous words of one do-gooder
travel the silk roads back to the east
and inspire the Chinese
with the works of the Buddha
even when Indian belief has ceased

The Hindu faith has no such leader – no great prophet ever appears
it is simply the religion of the people of India that emerges over four thousand years

So yoga emerges as a system of thought
where meditation clears the mind
where, from ancient times, medicine's taught
surgical procedures defined
with advice to keep the body pure
since prevention's ever better than cure
to study the body, part by part
anatomy, digestion, the role of the heart
perform skin grafts, remove cataracts from eyes
using liquors to anaesthetise

Two thousand eight hundred years have gone by
since Baudhāyana first calculates pi
and the square on the hypotenuse
way before Pythagoras got the news
and beginning six hundred years BC
at Takshila, the world's first university
where, from Greece and Babylonia
from China and Arabia
up to ten thousand students from foreign parts
study the Vedas and Eighteen Arts
study medicine, surgery, tactics of war
archery, hunting and elephant lore
politics, languages, astronomy
economics, mathematics, philosophy
animal husbandry, herbal plants
accounts and commerce, music and dance

Where the spiritual and mathematical link
meditation allows Hindu scholars to think
that using a positional design
will require only numbers from one to nine
and that the infinite void will bestow
a tenth and final symbol, the zero
thus delivering the numbers system we know
then developing multiplication and long division
square and cube roots, algebra and algorithm
while Panini's 'Grammar' is the world's introduction
to the rules of syntax and language construction

And nine hundred years before all the fuss
surrounding the work of Copernicus
Arybhata is perfectly clear
that Earth like the Moon is a spinning sphere
that orbits the Sun once a year
and thus
why solar and lunar eclipses appear

India, though, is not confined
to a spectral world of spirit and mind
it's a vibrant dance of humankind
of fabulous wealth and tales of glory
of merchants who sail the seas for spice
but this story starts back in prehistory
on an Earth still covered in ice

Where, at the end of the last freeze
the great landmass of South-East Asia
drowns beneath the flooding seas
leaving only the Philippines
Indonesia, Malaysia
and waves of terrified refugees
fanning out every which way
becoming sea nomads
forever in motion
who still fish the coral reefs to this day
where once they ruled the ocean
from Pacific islands west as far
as China, India, Madagascar
and the coast of Africa

Pliny in the first century AD
describes them as traders in spice
who appear on rafts from across the great sea
and who race the winter currents back to paradise
and some believe that these Austronesians
(first to grind flour, to domesticate rice)
are civilisation's magic wand
that they conjure up cultures of China, India
Mesopotamia and beyond

Certainly the first humans out of Africa
are these Austronesians' forebears
and whether or not their continent drowned
and whatever civilisations they found
this ocean world is theirs

They're the greatest sailors the world's ever known
as Captain Cook and his crew will find
when they take on a Tahitian called Tupaia
a man with a map in his mind
it just astounds them that Tupaia can
guide them to any island they pick
over an area greater than
the span of the Atlantic

Austronesians are traders in spice
Indians become traders in spice
so how does the story go? – we just don't know
they make similar boats, take similar routes
have similar words for various fruits
perhaps the sea nomads are peaceful invaders
who settle the Indian coast one day
and become the 'Panis', the Indian traders
or maybe they just show these Panis the way
suffice it to say

From faraway Edens
prehistoric Austronesians
sail west as far
as Madagascar
with the aromatics of paradise
which in turn entice
Indian traders in search of spice

8 Indian Ocean

Lemon grass, camphor, cinnamon
nutmeg, musk, mace, cassia gum
ginger, turmeric, cardamom
incense, hashish, opium
horns, hooves, animal skins
silks, satins, muslins, linens
tigers and parrots, peacocks and peahens
red jungle fowl who turn into chickens
teak, sandalwood, indigo, ebony
topaz, turquoise, sapphire, ruby
lapis lazuli, glass, ivory
diamond, pearl, quartz, ambergris
apricot, peach, sweet clover, sesame
silver, copper, lead and tin
every kind of medicine
pigments, perfumes, fragrant smells
coral, crystal, tortoise shells
and gold
all bought and sold
arriving on the Indian shore
five thousand years ago or more

The Panis sail vessels fit for a king
such that Marco Polo wondered
at all the gold and silver bling
and the crews of up to three hundred
and with colonies, cultures, trading posts
throughout the Pacific and Indian coasts
from Africa to the Malay Archipelago
from Japan to Java, from Burma to Borneo

India stands at the centre of these
for almost thirty centuries
and this great Indian Empire is made
not by conquest but by trade

While, away to the west, a crocodile
swims lazily through another great nation
as the flooding banks of the river Nile
feeds an astonishing civilisation

According to their hieroglyphics
Egyptians come from a place they revisit
this is the fabulous Land of Punt
where everything is exquisite
but where is it?

They return for spices and hardwood trees
these are great expeditions it appears
since Queen Hatshepsut finances one of these
which takes three years

Punt is a distant country
‘washed by great seas’
with metals and jewels
a land full of valleys
dog-headed apes
and long-tailed monkeys
great feathered creatures
who fly with ease
up to the boughs of coconut trees

The people of Cranganore, India, claim
to have sold spices and balsa wood
to five Egyptian ships that came
in the time of Queen Hatshepsut

While Pococke, in the 17th century, says
that “at the mouths of the Indus
dwell a seafaring people
active and ingenious”
who coast the shores of Mekran
on a journey never-ending
across the Gulf, past Oman, Yemen
and up the Red Sea, then ascending
the mighty stream that thunders
their eyes aflame, their oars dipped
marvelling at this land of wonders
where they build the Kingdom of Egypt
and “these are the same stock,” he says
“that, centuries after this colonisation
travel to Hellas and her islands
and there, spread the blessings of civilisation”

These are the Panis or ‘poenis’
the seafaring traders
of the Hindu Vedas
and Eusebius, himself from a Grecian isle
says Ethiopians emigrate
from the Indus state
and settle along the Nile
so the Land of Punt
is the land of the Panis, and the place
“the mouths of the Indus”
but Egyptians trace their race
even further back to a greater land of plenty
if Punt is the Indus Delta
where’s ‘Amenti’?

The Emerald Tablet is found in a secret room
beneath the pyramid that is Cheops’ tomb
described as a plaque with bas relief set
in a strange Phoenician alphabet
and made with exquisite skill
of emerald or green crystal

The writer is Thoth, Atlantean Priest-King
who founds the Egyptian colony
and tells of his people’s suffering
after the sinking of their mother country
it’s a work of profound insight
as, “formed of space dust”
we follow the story
of the “Children of Light”
“far beneath the Islands of sunken Atlantis
deep in Earth’s heart lies Amenti’s Hall
halls of the Dead, halls of the Living
bathed in the fire of the infinite All”

Atlantis?

’fraid so – and I’ve to understand
that, to the ancients, the Atlantic
stretches to the east
Plato describes a tropical land
with every sort of strange plant and beast
elephants, pineapples, it’s where you would find
jewels and metals of every kind

But, more, he describes a great nation
with extensive canals for navigation
networks of waterways for irrigation
up to three crops a year and a vast population
with monsoonal rains that flood the land
volcanoes and earthquakes that burn the air
and that given the antiquity of Atlantis
agriculture and civilisation
probably originate there

When the first migration out of Africa
arrives in Indonesia
they don't see the exotic fragments of today
these glittering islands
are just the highlands
of a land the elements will sweep away
when three devastations of ice and fire
raise sea levels a hundred metres higher
and the people of Atlantis go to their graves
as the land now called Sunda
sinks beneath the waves

Genetic studies by the Human Genome Organization
reveal a single south-east Asian migration
just after these 'Noah's Ark' events
which then populates the continents
since southeast Asian civilisation
is much older than any other we know
mitochondrial DNA lineages have been evolving there
since the arrival of modern humans fifty thousand years ago

The peoples of Atlantis
flourish on the equator
during the Ice Age, but later
when Earth's gases burst through the ice
they decimate this paradise
and its traumatised refugees
sail the Pacific and Indian seas
finding shelter
in the Americas, Easter Island, Polynesia
in the Indian and then the Nile Delta

Time may kick over the traces
but I know what links all these places
when I look at Austronesian and Egyptian faces

A sinking tropical continent
remembered as 'Atlantis' or 'Amenti'
becomes the Spice Islands
the land of plenty
and its rafting refugees
fanning out across the seas
become the Puanit, the traders who fire
India's great maritime empire
and as trade expands
its cultural pioneers are shipped
to found the fertile lands
of Ancient Egypt

The Emerald Tablets tell a spiritual history
not of creation but resurrection
from a sinking land across the ocean waves
to conquering and spiritually infiltrating
the 'hairy barbarians' of desert caves

The annual flooding of the Nile
is a heartbeat
water to drink, food to eat
transport, order and control
a rich life, wrapped around by desert
where Egypt grows its solitary soul

Hunter gatherers become herders and farmers
with mortar and great building by 4000 BC
a millennium later King Menes unifies the country
till at Memphis the first of the pyramids rise
on this journey to eternity

So secluded is this culture
that the beliefs at its heart
its structure and art
remain pure
and Egypt appears
to change little for three thousand years

Most people are farmers with oxen and wheat
with mud-brick homes, cool in the heat
a kitchen with grindstone, an oven for bread
white walls and rush mats, chairs, table, bed
and a private shrine, while beyond the home
a shrinking Nile yields a rich, black loam
to plough and plant with melon, vine, fig
tools to repair, canals to dig
harvests to reap, grains to store
before the waters rise once more
when farmers turn builders and off they go
to raise a temple to their Pharoah
by the sweat of their brow they raise Egypt's great land
overseen by a man with a rod in his hand
stone-cutting, drilling, shifting and lifting
tilling and milling, surviving, God-willing
the river allows its people to thrive
women to thirty, men thirty-five

While the rich bathe and swathe their loveliness
in perfumed oils and elegant dress
both genders wear makeup, jewels and wigs
go hunting and boating, sup wine and chomp figs
as they chatter and dance at sumptuous feasts
at the homes of the royals, the nobles and priests
it may seem unfair that they have so much more
but that, after all, is what rules are for
even women and slaves have rights within law
and although, understandably, men have more
there are rights of inheritance, rights of divorce
property rights to which all have recourse
and, through Solon, their rules and regs cross the border
via Greece and Rome to our own law and order

While Homer, though he may have been blind
says the greatest doctors of all human kind
are Egyptians who train at the House of Life
where surgeons are skilled in the use of the knife
setting bones, stitching wounds, these are specialists
eye doctors, dentists and alchemists with potions and lotions
with opiates for pain, procedures for treating the lungs, heart and brain
for tending the sick, the infirm or insane, and for making the body whole again

Whether in medicine, law, or in thought
at the centre it's harmony that is taught
as their radiant sculptures and paintings display
on walls, on linens, papyrus and clay
in patterns of light within living rooms
or sealed up tight in eternal tombs
it's a dazzling flow of colour and line
that vibrates through every symbol and sign
where numbers are magic, proportions divine
where art and mathematics combine
where Egyptian architects enshrine
the Golden ratio in design
as addition, subtraction, multiplication
division and fraction, simultaneous equation
areas, volumes, circles and spheres
algebra and geometry appears
as builders with ramps, rams, levers and drills
raise structures of numbers with consummate skills
and based upon mathematical grids
produce ships, cities, temples and large pyramids
which embody Atlanteans' lost holy site
their sunken volcano, their Temple of Light
the primeval mound from which all life springs
that beats in the hearts of all human beings

Matter and energy make up the whole
you're a body, a spirit, a shadow, a soul
at death, your life-force is free to roam
but needs your physical form as a home
till you become one of the blessed dead
when your spirit and soul are reunited
judged 'gainst a feather of truth' your worth
to continue your spiritual life on Earth

At Egypt's heart lie the Mystery Schools
where the magic of science and harmony rules
where the powerful Magi and students immerse
themselves in the laws of the universe
through astronomy, geometry, music, they know
that the cosmos is one, 'as above so below'
through numbers, the patterns of nature make sense
of a world of vibration and resonance

9 Mediterranean

Egypt's Mystery Schools groom the Pharaoh, who
must learn all that the Magi understand
and, trained to do what a Pharaoh should do
as a God he must ride to defend their land
to protect their trade routes, fight civil wars
that all shall obey their magical laws
yet something in Egypt ossifies
in the New Kingdom pyramids cease to rise
Nubians, Persians cast greedy eyes
till the land itself becomes the prize

As the genius of Egypt begins to expire
a phoenix rises from the fire

Phoenix is a bird of fire and light
born in Indonesia it takes flight
first settling in India to rest
it travels west to Egypt where it's doomed
for as it roosts the nest becomes a pyre
amid the flames the old bird is consumed
while a new bird rises from the fire
a bird of paradise, a dazzling sight
the phoenix is a bird of fire and light

The lands between the Black Sea and the Red
are always locked in combat, it is said
they form the crucible, they cannot hold
although all peoples, cultures claim the prize
this melting pot can never be controlled
as one empire is born another dies
yet here the People of the Phoenix rise

They're fishermen from Indian shores, who cast
their nets across the seas and haul in vast
amounts of merchandise, they are the 'Panis'
Atlantean refugees, the Austronesians
sea nomads who trade between all regions
the Latin word for 'panis' is 'phoenis'
the Panis resurrected are Phoenicians

Beating oars like wings, from Tyre they spread
establishing their empire in the Med
the ports of Carthage, Malta, Tarragon
Cádiz, Gibralta, Tangier, Sur and Sydon
Tripoli, Beirut in Lebanon
Ibeza, Marseilles, Malaga, and so on
purple dye they fashion is world class
their fabrics are so fine that kings are smitten
jewels, spices, wines, Phoenician glass
their wealth and skills are legend, it is written
silver comes from Spain and still more loot
from Nubian gold through Egypt, tin from Britain
they become the Basques and Celts to boot
as Gaelic texts discover at their root
Phoenicians settling the Irish realm
with one Fenius Farsa at the helm

Phoenicians drive the trade routes west and yet
unpaid, provide a gift, lest we forget
the consonants that make our alphabet
for vowels, we're in another people's debt...

The gods journey to Olympus along silken paths
Zeus himself comes from the east, he is Aryan
Athena is Mycenaean
Persephone speaks Persian
Apollo is Ionian
Hera and Hermes sail up the Aegean
Rhea is a goddess of Minoan race
Dionysus and Ares travel all the way from Thrace
while Aphrodite is a Cypriot
this is indeed a godly melting pot

Greece, with its thousands of islands
always embraces the sea
but as Mycenaean and Minoan realms
disintegrate in war
Aryans from the Indus arrive upon the Aegean shore
mingle with Achaeans, Dorians, Egyptians, Nubians and more
until the energy that such a conflagration brings
transforms a world of fishermen and farmers
into a land of city states and kings

Perhaps this mingling
is also a meeting of minds
as, for all its ingenious gears
and screws of various kinds
its water pumps and water mills
torsion catapults and drills
chain drives, canons, types of locks
three-masted vessels and dry docks
wind vanes, towers replete with clocks
and before we forget
those vowels for our alphabet
for all of these, the greatest gifts we find
are secular science, mathematics
rational thought and the modern mind

Pythagoras roams widely in his youth
with his dad, a gem merchant from Tyre
from the first he seems to value truth
Thales points him to Egypt's empire
for twenty years he fasts and learns their rules
but, graduating from the Mystery Schools
he's exiled into Babylon, a priest
he learns from their magi, the Chaldean system
then, in Buddha's lifetime, he goes east
and with the Brahman, studies Indian wisdom

Returning home, now middle-aged, he sees
his island, Samos, ransacked, so he flees
and, washed up in Cretona, Italy
he founds a college of philosophy
transmitting every thought and innovation
harmonics radiating out from China
that the seed of movement is vibration
geometries of India's Baudhāyana
from Egypt that, to see, one must immerse
in mathematics of the universe
he believe that thinking purifies
that in serving truth a soul may rise
but truth it seems does not please everyone
though now we bless him for his enterprise
Pythagoras ends up on the run
no one knows where or when he dies

But this is a connected world, so much is known
a restless trading world born in the neolithic
with Mayan pyramid and Celtic standing stone
Easter Island and Egyptian hieroglyphic
spice and silk, Atlantic to Pacific

While, in Greece
at the hub for a few hundred years
a new kind of questioning thought appears
Thales asks ‘what is the world made of’
Pythagoras delves into abstract thinking
Plato explores beauty, goodness, love
Socrates questions everything and, unforgiving
says ‘the unexamined life is not worth living’
playwrights Euripides and Sophocles
conjure up comedies and tragedies
charting our relationships and destinies
while sculptures reveal human bodies
with muscles, genitals and hair
as if the outbreak of intelligence is everywhere
Aristotle writes on drama, politics
biology, aesthetics and poetics
the unity of nature and of state
founder of logic, analytics
he trains Alexander the Great
to use his brain
‘nature is constantly changing’ he says
‘nature does nothing in vain’

So it must be with intent
that Alexander goes marauding
conquers half a continent
and when, aged thirty-three
his rage is spent
his generals divvy up the territories
trade with India, Africa
via Egypt’s Greek Ptolemys
while Greeks of central Asia
through Seleucid Empire and Bactria
finally meet up with the Chinese
as they all develop silk and spice routes
for the next three centuries

Meanwhile on the west coast of Italy
a small kingdom is sitting prettily
but when Tarquin the Proud is deposed
a novel solution, a rule by the people
'res publica' is proposed
having vanquished the Sammites, Campanians, Etruscans
Carthage comes into view
and when the Phoenician empire is dead
they take the Greek empires too
until all their enemies have fled
and Rome dominates the Med

But all this wealth goes straight to the head
of the rich greedy senate who won't pass a law
giving rich greedy merchants, or anyone, more
while reforms in military procedures
make soldiers more loyal to their leaders
than to their home
so now a commander can ransom all Rome

The Republic, dazed by its own success
opens up ways for kings to progress
as, in private, three generals agree
to split the empire into three
one of them's a diamond geezer
goes by the name of Julius Caesar

And so the story goes, that having conquered Gaul
and caused the senate's forces under Pompey to fall
he arrives in Alexandria, where it is said
he's immediately presented with Pompey's severed head
while outraged by this atrocity, he accepts their generosity
visits Alexander's tomb and though, reclining in his room
may sense that there are rifts, he does receive exotic gifts
none more than when a bedroll is unfurled
and a strange compelling woman
leaps into his world
with the claim
that she's the ousted elder sister
of the little Pharaoh boy
she's in danger for her life
Caesar's fate may be the same
Cleopatra is her name

Finding they're surrounded by Egyptian rebel forces
Caesar, who is fifty-seven, summons his resources
swims the Hellespont, sorts out the military matter
and sails off down the Nile with a pregnant Cleopatra

She's in Rome with their son
when Caesar's undone
and his friend Mark Antony
helps get them away
lest they too fall prey
but that's only half the story
for, when Antony has vanquished Caesar's murderers
he summons Egypt's Queen to confer
she arrives late on a sumptuous barge
and makes him come to her
anyhow, so they shack up
have a few good years, until
Caesar's nephew, Octavian, gets his chance
and moves in for the kill
and he becomes Augustus
first of those real crowd-pleasers
as Rome rises to new heights
under centuries of Caesars

Cleopatra's beauty is her genius
so clever even clever men are smitten
Alexandria's library, said to contain
every book ever written
adjoins the palace, her home
she is heir to both Greek and Egyptian empires
and almost marries with Rome

All these stories have been embroidered
the truth is hard to grasp
it is said that Antony dies in her arms
that she poisons herself with an asp
that as Julius Caesar battles the rebels
the great library burns in a fire
what is certain, is that with her demise
Greece and Egypt are lost to the Roman empire

From lowland Scotland to the Euphrates, Rome is massive at its peak
military and acquisitive, though its surface culture's strangely Greek

Greek household slaves educate the young and Hellenistic songs are sung
there's Grecian food and Grecian games, religion's Greek, just with new names
yes Roman culture's cool and chic – it's Greek

Greek art and sculpture's wall to wall, though they hardly develop the forms at all
Romans know what they like and like what they know, beauty and truth are there for show
and if it's luxury you seek – buy Greek

Musicians play in Grecian modes, Rome's poets whip up Grecian odes
while amphitheatres, grand abodes, arches, temples, bridges, roads
although they may be Greek affairs, Rome's are bigger and better than theirs
historical work and epic creation celebrate the Roman nation
art is not for innovation, its object is self-adoration

Greek hairdressers, doctors, decorators, secretaries, chefs and waiters
though the Romans far surpass, the Greeks are that what gives them class
be like the Roman arty clique – speak Greek

Power is where Rome prevails
where the Latin temperament's truly great
where the organisation seldom fails
to conquer and assimilate
where local gods are co-opted in
where slaves may dream of escaping the whip
where the conquered wealthy may even win
Roman citizenship

Winning is everything, nothing defeats
their great and glorious institutions
captives and booty parade through their streets
in Triumphs with sports and executions
business is business, this is the law
increase the trade, extend the border
funnel the loot to the centre
so they can afford their sense of order

This is a military regime where every man does his duty
beneath a narcissistic veneer of Grecian culture and beauty
(I can't think of anything sillier though it seems all too familiar)

The Roman Empire weaves a great story, the spirit of conquest never sleeps
while it masks a vacuum of vainglory, into which Christianity creeps

10 Dark Ages

A boy is born in Bethlehem
who may aspire to something higher
since, in Hebrew and Greek respectively
the words Jesus Christ mean salvation messiah

Virgin does not mean unsullied by sex
it just means that Joseph is Mary's first bloke
and 'carpenter' also means 'learned man'
while, observing the plight of Jewish folk

Rome rules Herod, who rules Palestine
so Jews are doubly enslaved
they're in turmoil, their rabbis are bickering
these are a people who need to be saved

Galilee in particular
seethes with discontent
it's a place where terrorists hang out
where revolutionary ideas foment
where it pays to understand
Joseph is a learned man
and his lad will be a firebrand
but what might constitute a plan
there's no exodus from this troubled land

Yet, with faith in a good and merciful God
and the other cheek turned, there may be a way
to unite them, using as the rod
that this is the eve of Judgement Day

His gambit is not to harmonise
but to polarise good from bad
"I come not to bring peace
but to set every son against his dad"

He ransacks the temples but not to betray
the Jewish faith, which is his own
"I was sent to the lost sheep of the House
of Israel and to them alone"

But he fails, having preached the Kingdom of God with his every breath
Jesus Christ is led to the cross and embraces it in death
his disciples preach Jesus to the Jews
but Jews are not buying the joyful news
that, of ways through life, there are but one
in God, the Father and the Son

Fifty years on, plans have changed, churches target Pagans, Romans, Huns
the Torah's gone and Christian priests have now become God's chosen ones
Paul rants at Roman games and sports
at Pagan sex and Pagan thoughts
of ways through life there are but one
in God the Father and the Son

Jesus dismisses outward appearance
Saint Paul on the other hand sets great store
in structure, doctrine, overt adherence
along the lines of Roman law
early Roman Christians protest
their ignorance, since God knows best
of ways through life there are but one
in God the Father and the Son

Why worship a poor Jew who died
one of a bunch of errant knaves
yet hearts are open far and wide
for downtrodden masses, labourers, slaves
Christ on the cross points out the profanity
and becomes the symbol of suffering humanity
of ways through life there are but one
in God the Father and the Son

Time has always seemed to circle
as the sun, moon, stars display
but with Christians it moves forward
from His birth to Judgement Day
and their plan is to see if they can
save the souls of every human
like Christ, they're not pacifists
Christians are evangelists
of ways through life there are but one
in God the Father and the Son

The crunch comes when Emperor Constantine
is in urgent need of Christian support
he prays to their God, wins his war
and Rome gives way to Christian thought

Rome worships Christ as one with God
Arius of Egypt finds this odd
a man cannot be God! he cries
and Eastern Christians sympathise
Germanic tribes take this 'arian' form
as they thunder west, take Rome by storm

The Hunnish tribe is a ravenous beast
that roars across the Middle East
under their great lord Attila
they plunder through Europe to Italy
and every Hun is proud and free
and every one's a killer

To do and die is what we've vowed
for we are the wild and free ones
a violent crowd, we won't be cowed
we're Europeans

Alans and Vandals enter Gaul
defeat the Franks and that's not all
they're off again through Aquitaine
Vandals and Alans, raining blows
don't mince their words, they mince their foes
slashing their way down sunny Spain

Then it's over the Med to Africa
taking control of Numidia
where Carthage becomes their home from home
they take Sardinia, Corsica, Sicily
before coming ashore in Italy
and laying siege to ancient Rome

To do and die is what we've vowed
for we are the wild and free ones
rape and pillage is allowed
we're Europeans

Angles and Saxons in animal pelts
sail down to Britania and murder the Celts
while the Alamanni cross the Rhine
find plundering Gaul is simply grand
so it's on to Alsace and Switzerland
there are people to thrash and the weather's fine

Then Gepids smash the accursed Hun
Ostrogoths sack Rome for fun
and joining all these happy bands
Burgundian, Suevi, Frisian, Jute
also stick in the boot, grab the loot
and settle Europe's fertile lands

To do and die is what we've vowed
for we are the wild and free ones
the everything's for me ones
our voices raised, our flags unfurled
and one day we shall rule the world
vengeful, fierce and well-endowed
we're Europeans
makes you proud

Anglo-Saxons, Franks
and Romans close ranks
while Germans are 'arians'
utter barbarians
so Roman doctrine is deemed the best
(though the grudge isn't gone
a millenium on
when Protestants protest)

In 390 Theodosius still musters
an empire larger than Augustus
yet, less than 80 years on
both western army and empire are gone
rubbed out by the two extremes
violent thugs and Christian dreams

In the power vacuum, Frankish kings
go round killing and nicking things
which leads to fear, protectionism
and in the end the feudal system

As cities decline, as people dismay
as schools and civic functions decay
as things look really black
the good church takes the slack

Clovis, Merovingian ruler of the Franks
frees the Church from taxes and conscription
from civil court jurisdiction
while receiving gifts for spiritual health
and thus amassing power and wealth
the church becomes the force that steers
Europe for a thousand years
for your immortal soul
the good church takes control

With sole access to the deity
clergy rise above the laity
folk speak to God through intercession
by a priest in a confession
yet God can hear your every thought
so just think what the good church taught
the good church does what a good church should
keeping you stupid for your own good
so if you see a book, avert thine eyeball
thou shalt not even read the Bible
and since folk cannot use their brains
the good church takes the reins

The art of bricklaying disappears
there are no stone dwellings for a thousand years
as harbours fill with silt and stone
as roads are blocked or overgrown

Where thieves and cut-throats lie in wait
an accident may seal your fate
but murder is the likely cause
just one percent will face the laws

Till trade and travel have expired
and no one moves, no surnames required
the village doesn't have a name
and yonder folk don't speak the same

The Romans know the Earth's a sphere
yet a medieval scholar will sneer
at nonsense that the Heathen spreads
of men with feet above their heads

No books, no thought, just endless grind
the closing of the western mind
between feudalism's straight-jacket
and the holy protection racket

Beneath Lords Temporal and Spiritual
the people become invisible
silently they tow the line
enslaved, like Jews in Palestine

The spiritual ideals Christians seek
enshrine love, pity, care of the 'meek'
but these European tribes are wild
and the meek, not necessarily mild

Perhaps they need their Christian slavery
to tame their heartless bravery
their dunderheaded knavery
to bash them into a nation
thrash them into civilisation
meanwhile in the name of God
and his Kingdom of fools
darkness rules

I've been feeling really low, resenting Denise being away all the time, feeling I'm living alone, without any of the freedom of being single. It has seemed as if I'm locked forever in a Little Ease, a medieval cell in which you can neither stand nor lie down. Using this negative energy, I've fuelled the writing, three chapters without coming up for air.

But when Denise returns, I collapse, put myself to bed. When she asks if I wouldn't like to get up and spend what little time we have, together, I say it makes no difference. She cries. I explain it isn't her, it's me, I feel lost. She recovers enough to ask if she can have a copy of my work so far. I read her the first couple of chapters and she says, you're not going mad, the work is good.

Since, she's been reading chapters, being kind and supportive. For my part, I've felt stronger and done my best to prove to myself that I am worthy. That's to say I've raised my game, dismissed any dark thoughts and retrained myself to work on positive energy. So, as well as giving the lessons and doing the writing, I've attacked the mountainous intray.

I'm sorting out the house, paying bills. There are things to repair and replace, all sorts of nonsense to do with mortgage repayments, bank accounts for taxes and savings. All that stuff

makes me feel murderous. I feel it's a trick by the Boring Ones to enforce boredom throughout the land. Makes me want to burn all the paperwork and live in a ditch. But no, be calm, dismiss dark thoughts, think positive thoughts, fit in, be happy and mindless.

So I'm doing a 7.30 'dog-jog' each morning, running along the beach or the crest of the hills. In with the good air, out with the bad. I've also got Dandy her tailor's mannequin and organised getting Stella's piano here.

Oh, I remember why I went down the tubes. My (now ten-year-old) student Max is being put in for a scholarship for Brighton College, for which I'm to give a recommendation. I know that his Mum, Angela, as a single parent, is looking to such a scholarship to support Max's musical talent. But I decide to be straight with her. Brighton College require grade-4 standard and Max isn't. It's obscene, I believe, to demand such a degree of specialisation from a ten-year-old. It's a treadmill. Max picks up lots of musical instruments, he's excited, he improvises, finds his own way. He's creative. Grades produce repetitive musicians.

Sitting in the living room (with Max down in the studio playing), Angela agrees, but intimates her financial concerns. Their piano is broken, will never be in tune. She gives this as an example but, before I know it, I give her our piano (which we paid £800 for), since we are inheriting Stella's. Angela is moved, I feel good about doing it.

But when I tell Denise, she's shocked. Here she is, working her butt off to repay our mortgage and I'm chucking money away. I realise I should have consulted her. Within two days Denise has come round, accepted it, but I feel terrible. That's what led to the unhappy weekend when I put myself to bed.

It's very different now. We're both happy enough, chatting daily on the phone. This is a time for work and, having cleared the air, I think we've both gone into mass-production mode. When it's colder, we tend to work harder and you can feel the days darkening, the nights closing in. Denise has just come back from Sunderland (where Amanda came to see the show) and this morning she's off to Bradford for a fortnight.

I've been haring around, doing all the chores to clear the intray. On thursday evening, during a lesson with Brighton's most brilliant florist, Matthew Gunn, accompanying his beautiful singing of Adele's songs, I ask if he can send my brother and sister-in-law plants for their birthdays. They receive a huge pot of orchids.

On friday, after lessons, I pick up Dandy. We go for a meal and watch a movie. Saturday she helps me get Duncan a present. (All three of Den's in-laws, Karen, Richard and Duncan have their birthdays on the same day.) We order new hair cutters, sheets and housephones through Amazon Prime (which Sam also helps with), walk the dog and buy food for sunday. I can feel my load lightening as the last outstanding bills get paid, plants get watered, chores and surfaces done and dusted.

Early on Sunday we drive to Gatwick, pick up Denise and, with Sam, have a lovely family day together. In the evening, I give Dandy a lift to the station and thank her for all her help. It seems inconceivable but the intray is clear.

It's 9 in the morning. Denise is on her way up north, Dandy's in London and Sam's off later today to visit his friend Meno in Holland. Over the next couple of weeks, all I've to do is give lessons, learn three pieces to accompany Charlotte's grade 3 singing exam and find out what happens between the dark ages and now. Here we go.

11 Brightness

There is a difference between a faith
and how a faithful view their mission
Jesus preaches mercy
not the Spanish Inquisition

Mohammed, blessed be his name, is clear
as to the role of heart and mind
“whoever hath not kindness
hath not faith”
that is to say, be kind

“Seek knowledge from the cradle to the grave”
in every culture, every season
“God hath not created
any better thing than reason”

And so on, kindness, knowledge, beauty, truth
well, all great thinkers say the same
we need the next to undo
harm done in the last one’s name

Islam absorbs both Jew and Christian creeds
attends to weaknesses therein
no pyramid of priests
to say what constitutes a sin

No prophet may be God, no priest divine
no flock to lead as if they’re blind
it calls each individual
to open heart and mind

God may not be seen in human form
but gazing at the sky at night
connect with and reflect
upon those tapestries of light

Islam
in its golden age
is the fount of knowledge
and does indeed shine bright

Are geometric patterns meaningless, compared to western illustration
do waves, whorls, stars and spirals limit our illumination
or may they reveal the fractal patterns of creation

While Islam is Arabian
in a century it's gigantic
stretching west from India
to the shores of the Atlantic

People flock from everywhere
to the new City of Peace
Baghdad is a miracle
whose wonders never cease

Tolerant of all beliefs
Islam's appeal is vast
"surely things will be better
in the future than the past"

Refugees from Plato's school
Nestorian physicians
Pagan scholars, Christians, Jews
Indian mathematicians

Translate every ancient text
every manuscript that speaks
of learning and experience
from the Chinese to the Greeks

Assimilates each discipline
and moves them forward fast
"surely things will be better
in the future than the past"

Poetry for Muslims is the single highest art
the Qur'ān in rhyme and rhythm speaks the language of the heart
only Chinese, Indian and Arab cultures at this time
resonate their poetry by ending with a rhyme
romantic love, the heart that seethes and soars, that leaps and longs
passes via the troubadours to modern-day pop songs
Arabian literature is filled with wonders and delights
not least the epic One Thousand and One Arabian Nights

Al-Khwārizmī's Algebra reveals a world of abstract sense
ibn Isḥāq, ibn Qurra measure Earth's circumference
Indian numerals become the signs we use today
ibn Hayyān approaches chemistry the scientific way
giving detailed information on reduction, calcination
sublimation, crystallisation, melting and evaporation
al-Kindī places reasoned thought above theology
ibn Sīnā says we have free will
to choose our destiny
that in thought
at its height
we may see the light
of the books that he
and al Rāzī write
the Canon and the Comprehensive Book become
as soon as each appears
the standard works of medicine for seven hundred years

There are hospitals with specialised wards
where hygiene's highly prized
travelling clinics, pharmacies
advanced and civilised

Great libraries and colleges
rise throughout Islamic lands
and feed a learning frenzy
every Muslim understands

That through knowledge you may be
what you wish to be at last
"surely things in the future
will be better than the past"

While Baghdad is a melting pot for thought
where intellectual worlds collide
the Arab taste for travel spreads
its learning far and wide

Cordoba the capitol of Spain
becomes another shining light
with bookshops, gardens, libraries
with paved streets lit at night

A university with nearly half a million books
a shocking sight
one northern visitor says almost everyone
can read and write

Here, even ideas of atheism and evolution possess
minds that take delight in the advance of thought and process
there's the medical and philosophic works of Averroës
while, considering climate, geography, psychology no less
ibn Khaldūn takes a novel view of history, to stress
emergent patterns within human progress
he says
on the surface history's a parade of kings and incidents
while its inner meaning subtly presents
insights into hows and whys that cause events
charts developments
in social coherence
and organisation
which ibn Khaldūn calls the science
of civilisation

With this realisation the scene is set
and the way to the beautiful life is cast
"surely things will be better
in the future than the past"

As the ancient world is lost
Islamic thinkers raise, its scholars lift
its knowledge and present it
to the future as a gift

Even more, it is their very tolerance
that is the great event
that fires the Renaissance, provides
the West's Enlightenment

That in thought
at its height
we may see the light

Dandy and I are off to Bradford to visit Denise. We meet at Richard and Karen's, who tell us they've kept their Westminster Council jobs (I think that, partly, they'd have liked to get the sack). Then we're over to Margaret and Eric for a meal out.

Dandy regales Margaret with stories of her three weeks work experience at the Globe Theatre. She's loved every moment and Mum listens intently. One thing about Dandy having a loud voice is that Mum can hear her. Dad, having finished his memoirs, is writing a novel about secret operatives, spies, set in the years leading up to world war two. It's something he knows about.

At about 4, we head for the motorway, where, a couple of hours in, we grind to a halt. There's been an accident. Just two cars ahead, a vast container truck has jack-knifed. It must have happened seconds ago. We're hardly out of our cars before emergency services start turning up. Torchlight beams crisscross the motorway. Fire engines wizz up the hard shoulder. There's more than one vehicle involved. Police are investigating the crime scene. Dandy and I watch people being helped into an ambulance. A man is still stuck inside the cab of the truck. Traffic's backed up eight miles. We're told we're unlikely to move in the next five hours.

Smilah will need a piss, so do I. Lights everywhere, flashing blue, flashing red, I slip her lead on, pass little clumps of chatting motorists in thick coats and scramble up the high embankment into the trees. Too late I discover that they're prickly. A voice of authority calls. Can't have the dog out of the vehicle. I slide down and slope back to the car. Too cold to piss anyway.

There's a good tension in life, where you're suspended in the moment, and there's nervous tension. One is the excitement of not knowing, the other is fear of it. Mum has let go, having spent a lifetime encumbered by debilitating tension. I always wished she could let go, but seeing the fight gone from her today, one eyelid drooping, trying to hear me, near broke my heart.

Fancy a game, asks Dandy. The Story Game, I say. What's that? No idea. Have to make it up. Okay, one of us is the good angel, the other the bad. One makes good things happen, the other makes bad things happen and we take it in turns. As good angel I conjure up a happy girl called Wincey who lives in an African village, with her family. Dandy makes bad people come and burn the village. Poor old Wincey watches her family burn. I have Bernie the Spirit Lion turn up and save her. Dandy has Wincey fall off Bernie's back and down a hole where John, King of the Spirit World captures her.

After a while, Dandy tires of making horrible things happen. She wants to make nice things happen, so we swap. Somehow, after many exciting and rather gruesome adventures, it turns out that Wincey is really the Queen of the Spirit World reborn and they are enacting the Great Myth of Creation! As John and Wincey promise to be true until death, when it'll all happen again, a police officer waves us on, past the truck where the driver is still trapped.

We zoom off along a dark empty motorway and plunge into the first service station to relieve ourselves. I'm a bit the worse for wear when, nine hours after we set out, we arrive. I'm just going round the Ring Road, no idea where I'm going or what side of the road I'm on. Dandy calls Denise. Pull over, says Denise. I screech to a halt and sit there, till Denise and her thespian chums sat-nav in on us. Denise takes the wheel and drives us to The Old Mill where I flop into bed.

It's beautiful here. We're in a deep valley, a steep green rocky world with cascading streams and waterfalls. We go for a long walk down a gushing river, clambering along a muddy pathway, past huge rock formations, birds flitting overhead, their songs echoing between the rocks.

Bradford is apparently the home of Indian cuisine. We find a packed restaurant serving all manner of Middle-Eastern and Indian delights. After the popodoms, curries and wine, it's all we can do to drive back to the Water Mill and dive into bed.

In the night, it snows. Come morning, before we have to say goodbye, Denise and I take Smilah for a walk to the top of a hill, where we have a kiss and a chat, gazing at a panorama of the moors in a bright ice haze. Den has a week off, in a week, including a two-night away-break she's planned for us in Caens. That's also the week Don moves to Carol's.

Time to go. Sam's been over to Holland, staying with his friend Meno and I'm picking him up from Gatwick, first thing tomorrow. We crunch down through the snow.

Nomadic tribes are crossing Beringia some thirty thousand years ago
until, six-thousand years later they're hunting down in sunny Mexico
where charcoal hearths and bones lie buried beside blades of stone
but once the waters rise and Beringia drowns, America is alone
navigating the Pacific is an impossibility
its civilisations are thus home-grown
since no one can get there by sea

Why – we raft across the Red Sea out of Africa some seventy-thousand years ago
we fish the off-shore kelp forests don't we – that's not across the ocean though
no, but Indian maritime trade is up and running five thousand years ago
when the 'panis' of the Rig Veda are known to trade with Babylonia
sailing the Indian Ocean in catamarans from Indonesia to Africa
maybe, but not to America, the Pacific is vast, its islands tiny
no one can get there by sea

The Olmec thrive over three-thousand years ago
mother of all the American civilisations that will follow
from the Pacific coast of Guatemala to the Gulf of Mexico
they choose, in this volcanic land, to settle around a volcano
carve the great serpentine lava flow into cities, colossal heads
and representing the sacred mountain, the astonishing pyramids

People of the feathered serpent, sacred mountain, hieroglyphic word
people of the obelisk, the pyramid
the firebird

A deeply hierarchical culture, from slave up to divine king and priest
moving one of the heads takes a thousand slaves three months at least
their pyramid building conjures up an almost Egyptian nature to this beast
or the phoenix and the sacred mountain of the Phoenicians, as the Olmec pray
at their mountain summit to eagle spirit Orizaba to keep the volcanic fires at bay
they bitumen the boats, which support their vast trade network and they play sports
with rubber balls on huge courts, cultivate cotton for cloth, maize to feed their tummies
strangely, coca and nicotine, both unique to America, are found in some Egyptian mummies

Are the Olmec folk Egyptians, the heads suggest Africans or Austronesians
their sculptures all sit Indian-style, perhaps they're really red Indians
are they indigenous, it's said their name for themselves was Xi
so they may be Chinese refugees from the Xia dynasty
they also have calendars, they study astronomy
and speak of their ancestors coming by sea

Both the peoples of America and Egyptians living on the African continent
worship the same mythological creature, the serpent with a plume
as the Pharaoh's goddess Isis, or placed round King Tut's tomb
as the eagle with two serpents on the Harappan seal
in the Indus, heart of India's maritime empire
and the seven-headed Naga in Cambodia
while in China the serpent breathes fire

People of the feathered serpent, sacred mountain, hieroglyphic word
people of the obelisk, the pyramid
the firebird

Nomadic tribes of North America, from the Algonquin to the Hopis, all obsess
about this serpent, build pyramid burial mounds and wear the firebird headdress
the Maya know him as Kukulcán, the Inca as Urcagüey, to the Aztecs he is Quetzalcóatl
while 'aztecatl' means 'person from Aztlan', a great island to the northwest apparently
where "in a day 'four flower' destroyed all our flesh" except those who escaped by sea

Shades of the Sunda story, where a greater Indonesia erupts that is said to be Atlantis
where the seafaring peoples, fanning out become the maritime traders, the 'panis'
American 'Pawnees' are known to their own as 'panis', purely coincidentally
since America was sealed for ten thousand years until the Christians came
personally I feel we've sailed the oceans far longer than Christians claim
perhaps they just want to be
the first to arrive by sea

Whatever the truth that is lost, whatever the theories, views and opinions aired
human culture around the crescent from Peru to Africa, is somehow shared
by people of the feathered serpent, sacred mountain, hieroglyphic word
people of the obelisk, the pyramid
the firebird

And all this makes the path of Islam easier
as it spreads its crescent back from Africa to Indonesia
while Incans, Mayans and Aztecs have to wait eons
to meet the enlightened Europeans

12 Enlightenment

In 1000 AD a Muslim writes
of Europeans as brutish sights
“the warm humour is lacking
in them, their natures are dense”
without manners, wit or intelligence
while another describes Europeans thus
“they are more like beasts of the field than us”

The warm humour’s lacking because it’s cold
no time for fancy ideas to take hold
those militant barbarous tribes of old
have become hardy serfs who do as they’re told
between the crucifix and the sword
enslaved in life by their temporal lord
while the Church owns their soul
and their every thought
they work the land
their lives are short

While some may think of it as a blight
Christianity does unite
its people in a single creed
its Latin language serves the need
to frame its laws, to organise
till Christendom’s ready to arise
a millenium after its seed is sown
it spreads its wings, comes into its own

When there’s no Day of Judgement 1000 AD
the idea changes significantly
the City of God will no longer descend
gravity’s laws will have to bend
with personal salvation, the good shall rise
to the Kingdom of Heaven in the skies
beginning a journey without a plan
from slavery to the Rights of Man

If the prize is God in the Skies
what may Heaven on earth be worth

Individual conscience leads to dissent
where the Cross depicts an unjust event
meanwhile inquisitions do their worst
with water down throats until blood vessels burst
perhaps the priests ought to be sacrificed
Joachim calls Papacy 'Antichrist'

If rebels must go to Hell Fires below
what may Heaven on earth be worth

In a series of stages
from late Middle Ages
Europe will leave its Church in the lurch
set itself up on a secular perch
enlightenment, profit and pleasure to seek
in the whole of history this is unique
Muslims and Buddhists don't give their priests grief
let alone abandon spiritual belief
the Church may be rigid but the real thrust is
that Christ is a rebel himself seeking justice
if religion can't help, they must forsake it
if the meek won't inherit the world, they must take it

If the prize is God in the Skies
if rebels must go to Hell Fires below
then between the celestial and the bestial
what may Heaven on Earth be worth

When the Good Church at its height
calls on Christians to unite
instructs its kings and orders them
to rise and take Jerusalem
they thunder eastward raising hell
to slay the wicked infidel
and can't believe it when they find
a world that isn't mean and blind
even Saladin is kind
despite being their nemesis
he wins respect for who he is
and many Christians settle there
but those returning are aware
that things have changed with silk and spice
now they've a taste for paradise

Bring on the transport and the trade
and every innovation made
new stirrups, harness, work the horses
water mills and water courses
crop rotation, while clock towers
in villages ring out the hours
no time to waste, this is trade
there is profit to be made
and if we wish to trade in treasures
better sort our weights and measures
the more precise, the more we gain
meanwhile in Toledo, Spain
where ancient tomes, like treasure gleams
Jews, Christians, Muslims work in teams
translating what are seen to be
the great works of antiquity
on medicine, philosophy
art, science and technology
among all this Arabian wisdom
is their brilliant numbers system
for science and trade this innovation
streamlines every calculation
and ideas streaming out begin
a trail of pilgrims streaming in
like bees to honey they arrive
to taste this friendly way of life
while singing girls from Muslim Spain
wind up at court in Aquitaine
these educated women then
proceed to civilise the men
through songs they write and sing, they bring
their culture to the future king
and William rises to the cause
as first of Europe's troubadours

Spain's Christian conquerors now cast
out all trace of its Muslim past
despite a second and third crusade
no lasting gain is ever made
except, as fearful souls unwind
the opening of the western mind...

Daniel Morely returns to Oxford duty
his cases crammed with intellectual booty
universities rise above heresy, treason
as Adelard of Bath says “from the Arabs
I’ve learned one thing – to lead by Reason”

Reason gives people the tools
to think for themselves, to be nobody’s fools
to ask “how does the globe hang in the air?”
it’s a love affair

As personal enquiry comes centre stage
and shockingly ‘thinking’ is all the rage

Arabic numerals transform trade
credit transfers and investments are made
via Italian banks as the business world looks
to the advent of double-entry accounts
with its sacred ritual of ‘balancing the books’

To control ventures that probe
thousands of miles around the globe
that somehow hangs in the air
it’s a love affair

As personal enterprise comes of age
and making money is all the rage

Europe’s cities flourish and grow
courtships between old and new wealth follow
the dance of Courtly Love that delights
in chivalric tales sung by troubadours
of glamorous maidens and amorous knights

Whose colourful garments, full of allure
might catch the eye of mon amour
while she’s out taking the air
it’s a love affair

As personal feelings come out of their cage
and passion and fashion are all the rage

Even religion now seeks to shine
St. Denis in Paris is a wondrous sight
with buttresses flying, glass walls and the great
Rose Window proclaiming God is Light
light which all creatures radiate

With personal love, thought and enterprise
individuals may rise
self confident and self aware
it's a love affair

As the individual steps onto the stage
self advancement's all the rage
and human progress turns the page

Between 1000 and 1325
Europe's population doubles, its people thrive
plainsong becomes polyphony
the one voice becomes the many
and the western mind is open at last
surely things will be better in the future
than the past

In 1328 a plague from the east
a single microscopic beast
turns skin black with buboes, blood thick as gum
black and stinking with greenish scum
two hundred million Europeans succumb
amid horror and suffering that won't relent
the Black Death is Europe's defining moment

Feudalism's had its day
if lords want 'serfs', they'll have to pay
as eastern trade routes cease to be
great voyages of discovery
set out to find another way
as 40% of priests have died
church schools decline and standards slide

In Italy 'humanist' schools take hold
teaching maths, science, art to those enrolled
with navigation or banking, as each student prefers
but all shall be "poets, orators and philosophers"

Renaissance Men who know their worth
and who believe that this rebirth
will start to build a Heaven on Earth

This Rome reborn is qualified
by the Christian heart mourning those who died
by honest dissent, through reason and knowledge
as the question raised in the Axial Age
is answered, not by some prince or sage
but with easel and brushes, paper and pens
by the people themselves, the citizens

Machiavelli devises a system for seeing
that Princes don't 'own', but 'guard' their states
the State is a great new imaginary being
which everyone serves for the wealth it creates
leaders may have to account for their deeds
the opinions of minions, and serve their needs
whose voices and choices the printing press breeds

When Columbus reports a New World, its control
by Capitalism is ready to roll
while the Roman Church is ready to rock
as Protestantism starts stealing its flock
this private faith permits the alliance
of free thought, free enterprise and science
as the European States become giants

Which America funds, its land, its gold
provide centuries of riches untold
while its "gentle savages" seem to be
"content with nature", wild and free
suggesting a nobler way to be
even as they go to their graves
promptly replaced by African slaves

America's not in the Bible and nor
do the Ancients describe it, so we must know more
as the Scientific Method takes hold
there's no need for the God of old
just take it to bits, see how it fits
'Creation is one' says the Church in defiance
'Creation is one big machine' replies Science

The machine rolls on scientifically
commercially and politically
the Enlightened 17th century
sees Suarez announce that “men are born free”
that “all power comes from the community”
Spinoza believes emphatically
that “the true aim of Government is Liberty”

A century later and to the strains
of Haydn and Mozart, Rousseau complains
that “man is born free” and yet “is in chains”
this idea seems to flick a switch
as Reason, that got us out of the ditch
of dogma and magic and ‘let’s burn the witch’
becomes revolution at fever pitch
and the cry is now ‘let’s guillotine the rich’

In France revolution, while U.S.A.
celebrates Independence Day
while the Industrial Revolution
makes factory life an institution
where pamphlets and journals spark civil unrest
where Communism is manifest
where slavery ends, for we are blessed

By technology’s fabulous treasure chest
steamships, gaslight, photographs, trains
the motor car, radio, cinema, airplanes
proclaim the triumph of the West
which, by the end of the 19th century
is on the verge of complete control
of explaining the cosmos, so science reckons
as progress races toward its goal
and a halcyon age beckons
with a real sense of people’s worth
here comes Heaven on Earth

The next chapter is about the twentieth century and I’ve done it. I’ve just done it, poems, pictures, everything. And I’ve rubbed it out. I meant to copy and paste but deleted it all. I’ve checked. Sam’s checked. I’m in a panic. Never done this before, ever. No backup, no notes. It’s gone. I’ll have to do it again. I can’t believe it. I can’t remember a thing. I’ll have to. Go for it now, immediately, while it’s still fresh. Don’t stop till it’s done. Start remembering, anything...

13 Let There Be Lights!

Two scientific ideas, both prophetic
fuse to give the century its buzz
that the world's electromagnetic
and evolution's what it does

In a fugue where each dynamic system
each different form of government
and the rise of individualism
runs like an alternating current

From the 1850s evolutionary process
becomes the blueprint for society, for business
for charting every event, for personal self-development
while underpinning the very notion of progress
as seen in the rise of industry
democracy and fossil fuels
of nationalistic secular states
as equality breeds individuals

Inventors' aspirations
raise the public's expectations
photographic representations
force art into interpretations
impressionistic worlds of light
as electric bulbs make day of night
as recording and radio innovations
raise popular culture and personal love
way above all that old highbrow stuff

In the 1890s 'orientalism'
mind-bending drugs and spiritualism
peer into the crystal ball
and men like Oscar Wilde pursue
the insightful if subversive view
that you can prove anything at all
"even things that are true"

That there is not one reality
is confirmed by three new ways to see
right at the start of the twentieth century

Psychology, where inner drives
control our world and conscious lives
then the daring brothers Wright
give us the God's-eye view with flight
while Einstein's Relativity
says matter's made of energy

Materialism has to give
each moment breaks the mold
where everything is relative
the centre cannot hold

Picasso's wild cubist art
Stravinsky's Rite of Spring
Spengler's Decline of the West
sound a warning

As Nationalism climaxes with the Great War
and centreless Europe becomes a quagmire
of mud, exploding shells and barbed wire
like nothing before
it's not just the twenty-one million wounded
sixteen million dead in battle
nor the endless squalid suffering
"for those who die as cattle"
no survivor thinks that goodness
shall prevail or that progress
cannot fail to give satisfaction
those ideals die in action
these are the Wastelands Eliot conveys
Schoenberg's anchorless musical maze
like Quantum, an abstraction

Germany must pay reparations
to the glorious victorious nations
for the Ottoman Empire
it's finally time to expire
and while it may not be missed
the war ends another ancient tryst
as Austro and Hungary get divorced
and Russia goes communist, with the idea
that equality will never appear
unless it is enforced

The wonder of the age
is women's suffrage
in the U S, which bans booze
they wriggle out of corsets, bob their hair
shorten their skirts, shake their ass
and go to mob-run Speakeasys, where
rich and poor step on the gas
drink bootleg liquor and dance to hot black jazz

Their parents' values amount to zero
Chaplin plays the bum
now the underdog is hero
as the twenties roar
away from that war
kick over all trace
of its chilling events
and 'bright young things' embrace
the black experience
the blues that comforts you in sorrow
the jungle beat those jazz bands play
that says there may be no tomorrow
seize the day
anything goes
cut a dash
fly the Atlantic
make a splash, do something rash
invest in the markets till they crash

Free-trade markets should self-regulate
when it turns out they don't, it's too late
millions are thrown out of work, prices soar
Germans, still coughing up for the war
push cartloads of cash in the hope they'll be fed
that it will buy them a loaf of bread
until they choose the Italian way
and, with Hitler, Fascism wins the day

All this madness makes Russia seem sane
everyone there has a job
western lefties flock to republican Spain
where they fail to defeat Franco's fascist mob

In the States, F D R presents the New Deal
with vast public funding, the Yanks embark
on a program with an almost Socialist feel
nonetheless the thirties are dark
a depression lit only by Hollywood fantasy
“keep your sunny side up” the crooner purrs
as the atom is split, as Germany
starts eating its neighbours

The genocide of Jews is Europe’s shame
the Great War was “the war to end all wars”
the Second World War can make no such claim
and it peaks with the total wipeout of cities
by atom bombs dropped in democracy’s name

We’re now isolated humans in an existential state, authority has no voice
for any ethical values which we might care to create
each of us bears the weight of total choice

After two world wars and a depression
people have had enough
but, for powers-that-be, it’s not over
there’s the communists to rebuff
Churchill unveils the Iron Curtain
and the Cold War starts to strut its stuff

Europe’s empires lose their colonial conurbations
India’s the first of these new independent ‘Third World’ nations
the Jews get Israel, so they’re finally blessed
surrounded by Arabs, useful to the West
and when Chinese national forces can no longer resist
the world’s largest country becomes communist

East fears west and west fears east
but the real fear is the war that awaits
once Russia learns to make the Bomb
and a nuclear arms race escalates
there’s bound to be a world war three
it’s just when and with what weaponry
this endless standoff, this non-war
is enough to chill anyone’s bones
Einstein says that “world war four
will be fought with sticks and stones”

The Bomb inspires a new creation story
in which the cosmos evolves from a singularity
a massive explosion of energy
appropriately called the Big Bang Theory
as airflight goes supersonic
it's the cybernetic electronic dawn
and all this culminates in 1951
when I am born

I remember whole blocks of rubble in London
my granddad, a lovely old white-haired bloke
turning the motor off going down hills
petrol is rationed, the air smells of smoke
my parents are worried they can't pay the bills
I'm aware of this trauma in older folk
without knowing what it might mean
they want to feel safe, I think it's a joke
what kind of life-form just wants a new washing machine

But this is Consumerism, it's a sensation
a great psychological innovation
where once control was by deprivation
now shiny new products bedazzle the nation
and even if your income is tiny
you can afford the 'shiny shiny'

The Dream Home's the carrot, the Cold War's the stick
the Space Race gets going with Soviet Sputnik
the Warsaw Pact formed, the Berlin Wall rises
now there's the Cuban Missile Crisis
as fear of a nuclear holocaust grows
my parents take me on Ban the Bomb demos

Till us Baby Boomers leave the fold
to get sexed and drugged and rock and rolled
anti-establishment, anti-war
self-sufficient hippies galore
ecology howls, feminists roar
the political folk-singing troubadour
unites those who disdain all that's gone before
from beatniks to punks, who really cares
"money doesn't talk, it swears"

This goes way beyond dissent or doubt
they don't want to improve what there is
have their say or gain some clout, they want out
“turn on, tune in, drop out” Leary insists
amid burgeoning war in Vietnam
against more communists
yet everyone sings
an American tune
and there's an
American man
on the moon

While the young get stoned, Europe unites
U S blacks win civil rights
but liberalism is in crisis
once Arab states triple energy prices
worse, Vietnam ends but communism wins
and so a right-wing offensive begins
monetarists Reagan and Thatcher agree
to combat Islam's re-emergence
with covert war and secret insurgence
to starve public spending, chuck cash at 'defense'
driving Soviet Russia to bankruptcy
and thus rebuild Western supremacy
amid AIDS from Africa, third world debt
where Thatcher says if you care, you're 'wet'
the new shiny shiny solution
is the PC revolution

Despite the late eighties' crash and recession
despite energy crisis and terrorism
China reforms towards capitalism
and the Berlin Wall falls, an American Dream
as Russia collapses before our eyes
while the Gulf War furthers the West's fiendish scheme
to take control of the fuel supplies
with free trade between almost every nation
this is the age of globalisation
where a rising world population requires
global warming, relentless pollution
as every commercial institution conspires
to give the public what it desires

This energy century is set
to end with its greatest system yet
the World Wide Web, the Internet
has us networking madly for all we're worth
as, for the first time since our migration
out of the fire of our African birth
the whole species is in communication
billions of megabites
bouncing off satellites
all around Planet Earth

Wow!
what now

Now I've got to drive to Don's. It's dark and there's a howling gale. But the main thing is, I've finished the chapter. Never known any writing be so intense and traumatic, day after day. Blimey. Between remembering bits of the lost version, constructing other bits from scratch and trying to mesh all the bits, it would've been far easier just to start again. Not an option, kept getting flashbacks. Remembering stops you thinking so, when you come unstuck, you have to rev up your mind all over again. What is all this bullshit actually about?

Where are the car keys? Smilah's lead, her bowl and food. What else do I need? Got my holdall, documents, money, book, pens, paper. Lock up. A gust of wind chucks rain at me. On the A27 along the coast, winds are buffeting the car. It's like a wild horse. Everyone's doing their best to stay on the road. Wipers on ultrafast, for glimpses of the road ahead.

I don't think you two'll be going anywhere, says Don, cheerily. No, says Denise, giving me a kiss, there are severe gale warnings for the next few days. Good, I think, getting my coat off, scary enough getting here. I'm sat down with a drink before I notice the house is bare. I bet he can't wait to get to Carol's. Denise looks ghostly tired. Months of touring and she's just committed to the whole year, so she's only a quarter way through. She chats merrily with her dad about the show. I can't quite focus. Even so, when Denise says she's off to bed, I say I'll be along in a bit. Don shows me his scale model of his new apartment, with movable furniture, so you can see what goes where. Then he's off to bed. I shan't see you in the morning, he says, so we hug.

It's dark, we're grabbing our bags and running through the rain to the car to get to the ferry to get to Caens in France, where Denise has booked us two nights in a B & B. The wind hasn't abated, we're both half asleep and when we get to the vast ferry port, she asks, where's my passport? She rummages through and then realises that it must be in her other case that's on its way to Dublin, where Sister Act is on next. And that means she can't get to Dublin either. It could've dropped out at Don's, I suggest. Maybe they'll let me go without it, she says and I'm running after her into reception. They take details, tap away on computers, we wait.

No, they won't let us. We can't go. We go back to Don's, wake him up to get in and search for the passport. No luck. We sit down, have some toast and tea. Denise runs out of the room and comes in with her passport. She had it with her all along. We could go this afternoon. I look outside, where the wind is throwing the trees into crazy nightmarish patterns. Maybe not, I say.

Part Four

1 Our Glamorous World

Denise is away, beyond recall
white gulls float in a sea of white
I'm dazzled as the snowflakes fall
vanishing in the blinding light
waiting till my senses clear
and I am here

Spellbound in my shed
while man-made moons spin overhead
and spacecrafts probe the Milky Way
cities pulsing in the heat of day
billions of folk at work or play
shoppers shopping, hospitals operating
a global community communicating
with global systems of supply and care
responding to need, responding to grief
with food and medicine bringing relief
just the scale of it beggars belief

Strange
the idea that humans are bad, or can't change
given our transformation
we're not gods, we're apes
hairy shapes from forest landscapes
on a journey of continuous adaptation
with a fierce desire to achieve
and make things better for us all
if this seems too rosy a view to believe
just remember where we've come from Paul

In Dublin I ask, casually
what Denise thinks the best human qualities might be
without a pause she says 'invention, curiosity...'

The world I know is awash with it
my kids can trace their brave young lives
in an endless stream of gadgets and gismos
as each new games console or cellphone arrives
as the digital images dance, while the music flows
from CDs to MP3s and their boundless curiosity grows

They're texting, emailing, googling maps
from mobile computers that sit on their laps
to sleek shiny pocket devices with a million aps
these are the marvels on which they are weaned
with laptops touch-sensitive, TVs flat-screened
with iPods and iPads and I don't know what
Denise is a self-confessed gadget fiend
I think I'm not

But I've a room full of music technology
gismos to record, mix, burn and scan it
with speakers, phones, online PC
I'm buzzing with electricity
and all hooked up to the planet
outside the garden's a blanket of snow
but my sidelights glow, my fan heaters blow
for these are the wonders of the world I know

A transistor switches electric current off or on
from small cylinders they shrink to a microscopic strip
millions of transistors on a fragment of silicon, a microchip
computers are made of them, but soon everything's full of chips
fridges, cameras, pacemakers, hearing aids, trains, planes and spaceships

Within a decade computers run our lives
but they've not been programmed beyond 2000, so
we envisage global mayhem as the millenium arrives
such are the wonders of the world we know

While thousands of manmade moons, rocketed into the sky
by nations or great corporations, orbit some 120 miles high
global positioning satellites are targeting our weaponry
they find folk stuck up mountains and boats lost at sea
and when I jump in the car, my sat nav is guiding me
as satellites transmit to each cell phone and TV set
not to mention the fabulous internet

Developed by the US military
and linking computers globally
the web is the answer to a prayer
our market place, our social interface
the font of all we know and all we care
it's like switching on the world and it's to share
now we can chat forever with anyone, anywhere

And for everyone everywhere it has instant appeal
all of us coming face to face, changes the way we feel
look at the magazines, the clothes, even the social traits
already, just a few years in, world culture predominates

You can fly anywhere on earth you want
and go to the same restaurant
the sights may differ, the waiter's name
but the aspirations are the same

We listen to each others' music, assimilating
we buy the same detergent
as joined-up living becomes joined-up thinking
we're culturally convergent

Every creed, every so-called race
every pauper, every celeb is chatting face to face
as computers, satellites and world wide web
enfold us in their warm embrace
these are the wonders of our worldly place

Beyond the satellites, the International Space Station
is home to scientists from every contributing nation
it is currently being used by the Russian Federation
to assemble a space station for the next generation
but whether by Canada or Japan
it serves as an exploratory research laboratory
testing systems and conditions for all the missions we plan

Some of the spacecrafts in the pipeline will be manned
Chinese, Indian, Russian, Iranian, US and European missions are planned
while umpteen unmanned missions are wizzing off to see planets and stars
including Nasa's 'Curiosity' on its way to Mars

And we have yet more eyes in the skies
visions from space telescopes, Hubble and Chandra, mesmerize
images so beautiful, data so mind-blowing, so hard to realise
Hubble's 'Ultra Deep Field' peers out so far that we know
we're looking back in time to over 13 billion years ago
beyond our earthly paradise, one thing's crystal clear
distances are huge, nowhere's even slightly near
and for the foreseeable future, we are here

But the sight of a tiny blue and white planet, a fragile oasis
in the darkness of space is really our greatest boon
astronaut Bill Anders, describing its worth
says “we came all this way to explore the Moon
and the most important thing, is that we discovered the Earth”

The moon landing
transforms our terrestrial understanding

Now deep-sea submersibles explore the ocean floor
and it's not dead, as we thought before
suddenly we're seeing how our earth renews its skin
while around these crust-spewing vents and within
we're seeing creatures that thrive on its energy
till we hit on the truth, vents are fountains of youth
where life is born of earth's chemistry

Watching these earth systems, from rifts to the weather
shows us how everything weaves together
and the birds-eye view of our tiny zoo
hovering in infinity
changes our view of where and who
we might be
and as our fossil fuels dwindle
our fragility
as we fight wars in desperation
because we know only energy is our salvation

Nuclear power first wipes out cities
now cities glow with the juice it supplies
but there's a buildup of waste we can't bury or treat
as nuclear energy delivers us the power of our own demise
a new responsibility, we've to meet

Lasers, once dubbed 'a solution
looking for a problem', set their sites
from bar codes and printers to laser-surgery
these intense shafts of electromagnetic energy
may now beam sunshine gathered by solar satellites
back to power our homes and vehicles, twenty-four seven
without environmental impact, manna from heaven
as we find that real solutions have a charm
they do no harm

Walking Smilah on the snowy Downs
people are happy, nobody frowns
we're all excited cos everything's white
happy squealing kids in a snowball fight

I never dared think beyond parts 1 to 3
I needed them done before I could see
so I've no idea what the next might be
where am I steering
it isn't just technology and engineering
there's the whole population globally
cradled by media, sport and community

Everyone's out here to see the views
they're building a snowman, others join in
but whatever the different lives people choose
my students, or my family at Christmas in Dublin
everyone's always tapped into the latest news
the celebrity stories, the fashions, the flicks
Richard and Karen are booking up for the Olympics
the olympic ideal is inclusive, I think as I dally
to watch kids skid around on motorbikes down in the valley

Eric's saying he wants to take us all to Vienna again
would we email him our dates, so he can work out when
I wonder if that'll happen

Trudging into town I watch a Renault sliding
gracefully down the slushy hill and gliding
into the side of a car – ping
so slow and yet so damaging

More and more cars with more and more dents
more and more people, the mood seems tense
until, arriving at Churchill Square, I pause
human beings are swarming the stores
it's immense
squeezing out through their doors
piled high with half the store's contents
it's 'the sales', one of our great annual events
pile after pile for mile after mile – well there you are
there's some rice in the fridge, that'll do – home Smilah!

A hundred years ago our population was relatively small
from 1.7 to 7 billion in a century is quite a haul
and the biggest challenge is feeding us all

In the 1950s, Borlaug's disease-resistant wheats are a revelation
he's often credited with saving over a billion people from starvation

Modern agriculture is genetics, plant breeding
fertilizing, freeze-drying, instant dehydration
planes and helicopters insecticiding, seeding
while technology and mechanization grow
the agricultural workforce is laid low
so where do all the proliferating people go

They go to the city
said to be the future of the 21st century
over half of us now, are part of urban humanity
and this proportion will rise to nearly two-thirds by 2030
seats of learning and government, crucibles of culture, engines of globalization
powerhouses of economic growth, centres of creation, watch them grow
cities are the wonders of the world we know

This brave new world is a network of global villages, already
just 100 cities account for 30% of the world's economy
and the defining feature of this new urban age will be
jagged skylines as far as the eye can see

At the same time, a new category of megacity is rising from the dirt
factory towns in Guangdong, China – Knowledge Cities in the Arabian desert
the solar-powered, no-waste, car-free Masdar City in Abu Dhabi
Songdo, in South Korea, the world's first seamlessly interactive sentient city
where each wave of residential and commercial blocks sells out instantly
new smart cities where people can live friendlier, higher quality lives, tax-free

In the next 20 years, over 275 million Indians will move to the city
worldwide, the hoards of squatters pouring in, echo medieval days
where knights and walls once protected those sitting pretty
security guards and electrified gates reflect our modern ways

Cities are also breeding grounds
for scary microbes and hairy bugs
our numbers today are due to medical marvels
from DNA profiling to wonder drugs

Learning's also on the rise
nearly half the world's population
now receive some secondary schooling
while there's vastly increased access to information

City life requires specialization
specialization requires education
stimulating growth and innovation
with 7 billion and rising, we realise our role
as individually smaller units in a far greater whole

After eons, having slowly developed and grown
change itself has suddenly taken on a life of its own
gathering momentum, from man on horse to supersonic power
a spacecraft escaping earth travels at over 36-thousand miles per hour
change so fast, things become ephemeral on our spinning ball
and ever more driven, experience is all

As we learn about earth, as each culture converges
as we chatter globally, as we move to the city
a single vital message emerges
from the hydrothermal vent
to the starry firmament
we're to realise we're inter-dependent

The power to blow ourselves up requires it
our increasing momentum fires it
our tiny blue planet inspires it
and humanity at heart desires it
we are either self-abusive or inclusive
it's a kind of humility to guide our curiosity
solutions that do no harm require complicity

With complicity, our velocity, our invention and curiosity just seem to grow
is there no end to human ingenuity – of course the whole darn thing might blow
but here at the start of the 21st century, we are the wonders of the world we know
the marvels of the age, the breathless miracles of the moment, the pinnacles of power
the magic of our times, the ecstasies of our epoch, our era, our hour ...we glow
for we are the wonders of the world we know
god bless our industry

Looking out, a light rain is melting the snow.

2 The Business of Business

“This is ExxonMobil
we conduct oil and gas explorations
with development and production in all major world locations
with petrochemical and lubricants-marketing in almost 200 nations
our brand names, as consumers know, are Exxon, Mobil, Esso
we have 42,000 retail service stations
our reach is global
this is ExxonMobil”

All the systems we have made
politics, law, economics, war, communication
are fuelled by work and ruled by trade
presently, ExxonMobil is the world’s largest corporation

Corporations are amazing creations
when, aged twenty, me and my friends are about to begin
an artists’ agency, a kindly solicitor offers a cautionary word
if our venture fails, we may not only lose the dosh we put in
we’ll each be personally liable for any and all debts incurred

I want to walk away until I hear the wise man say
the answer’s easy, just form a ‘limited company’
so we do as we are bid, each cough up a quid
and that’s our limited liability

This is lucky, because our company does fail
and when our many creditors come around
begging, sobbing, showing me pictures of their family
I can say it’s nothing to do with me
I have limited liability and I’ve paid my pound

Company law lets me off scot free
because the world needs business and business needs money
if by investing, I can lose so much I can’t pay the bill
I won’t do it – no one will

So companies are separated from those who form their core
they are virtual beings, created by law
with legal rather than genetic codes
that come in countless shapes and modes

Coming in at number 5, Vitol is a private company
with 330 shareholders, each an employee
as traders in crude oil they are transcendent
but “what makes us different – we are proudly independent
masters of our own destiny”

At 11, the State Grid Corporation of China is owned by the country
as such, it takes “corporate social responsibility”
running electricity to legions of previously unconnected regions
offering “free power indefinitely”

Corporations are amazing creations
legal entities, impersonal domains that spawn
effective military chains of command – and so is born
a pyramid of corporate responsibility, for maximum efficiency
respectful of human capability, from the brains down to the brawn

Impersonal is good, it means we do what we should
leave our feelings and opinions outside with our fun
so there’s no argy-bargy and the work gets done
because by far the most heinous fault
is if everything grinds to a halt

Most of us serve companies all our working, consuming lives
without a fuss, we serve them, that they might serve us
they are wealth-producing beings, so everyone thrives
and while generations pass, we’re here we’re and gone
our amazing creations, these great corporations live on

Walmart sells groceries and everything from a hack-saw blade to a sweater
describing its purpose as “saving people money, so they can live better”
Walmart is the 3rd biggest in the whole world’s corporate show
and that’s staggering, because only “fifty years ago
Sam Walton opened the first Walmart store
in Rogers, Arkansas”

When a company is born, an ‘angel’ may invest
enough to sustain the fledgling until it’s ready to leave the nest
‘venture capital’ firms provide its ticket through college and beyond
they pick up ripe young companies, take control and wave their magic wand

As a company grows, its shareholders may see the profitability
of floating their brave young corporation on the market publicly

A stock market trades shares and derivatives at an agreed price
the world's stock markets are now worth 57.2 trillion dollars, which is nice
who plays this game, who makes these bets, who buys and sells these wares
individual investors, institutions, banks, corporations trading in their own shares
there are stock exchanges around the world, from New York to Belize
some like NASDAQ are virtual, electronic networks not fixed to territories
but in real time, they all reflect the rising or falling value of their companies

Dealing in stocks and shares, however, is only part of what gives
there are 'leveraged strategies' and there are 'derivatives'
the total global derivatives market is estimated to be
11 times the size of the entire world economy
that's because they are bets in advance
speculating on future performance
and so have value only notionally

Myriad forms abound
equity, interest rate, foreign exchange
commodity or credit derivatives, a whole range
of bets – like 'forward' 'option' 'swap' – from which to choose
you can hedge your bets, sell short or you can bet on shares to lose
there are even ways you can use, to manipulate share values

Just by serving their own ends, receiving their annual dividends
from the successful companies which they have backed
and moving their dosh to ensure it makes them more
investors perform the world's economic balancing act
which all the intrepid corporations endorse
by doing their best to steer the right course

Moment by moment the whole process in its wisdom
responds to every economic fluctuation in every land
where it's not abused, it's the only truly flexible system
for investment and for balancing supply and demand

With limited liability, corporate variety, military efficiency, profitability
self-balancing market flexibility, invention, initiative and creativity
our globally self-organizing network of trade and industry
is evolution in action and the spearhead of our progress
our communal bloodstream, our measure of success
whether in good health or in distress
we're open for business

Dandy and I are off to Keith's party
he's sold their lovely house, so this is goodbye
I said I'd never return but now I'm here and I don't know why

Climbing down into what was Pam's world
it's all neat and tidy now and full of Keith's friends
David and Jonny in opposite corners, so this is how it ends

Dandy and I give Keith presents
he'll get his test results sometime in January
he's got a month's hard work to get his new place ready

Nina's just had a heart op, so she's not here
Lala's just had a hip op, so she's not here
Sara's in Ireland so she's not here
and Pam's not here

I wander into her study
Keith says take any books that catch my eye
I find a few I know she liked and leave the room quickly

Out in the dark haunted garden
among her beloved plants, I remember when
she rang up, asking crossly, are you coming to my party then
no, I'm writing Pam (she knows parties fill me with dread)
if you don't come, I'll never speak to you again
okay, I'm coming, I said

The moment I got there, I knew what it meant
her whole gang were here in the garden and if I blink
I can see all our laughing faces, so young, so cool
our little kids splashing about in the pool
her last party I think

Inside, everyone's talking intently, so Dandy and I
circulate cheerfully, saying goodbye

There are downsides to business, which some decry
some devout folk say investors are guilty of 'usury'
the old sin of making money from money
since profits are not earned by work and they multiply
so rich get richer and poor get poorer, fueling inequality

Then there's Glencore
supplying crude oil, lead, zinc, copper, cobalt, iron ore
wheat, cotton, sugar, rice, barley, corn, a vast operation
making it the world's 16th largest corporation

Glencore has been accused of illegal dealings
it has a history of busting UN embargoes
there's an acid river in Congo, acid rain in Zambia
and severe human rights violations, so the story goes
forced whole-village evacuations are said to occur
like driving the Wayuu Indians off their land
in what is described as a massacre

Founder, Marc Rich, is charged with tax evasions
illicit dealings and various other legal glitches
till it's feared that he might lose his britches
luckily Marc's wife has made generous donations
to the Democrats during the Clinton administrations
so, on his last day, the President kindly pardons the Riches
he now dwells on the shores of Lucerne in La Villa Rose
I can just see Rich reclining upon his divan
surrounded by his Monets, Renoirs and Picassos – good man!

Another downside could be the poverty trap
if you're poor, who's going to throw money in your lap
enter 'microcredit' and the gentle man who began and led it

His belief in credit as a fundamental human right
so helpless people can make it on their own
causes Muhammad Yunus to establish
the Grameen Bank in Bangladesh
and from his personal loan
of small amounts to destitute basketweavers
who gain freedom and who pay him back with pride
a burgeoning world microcredit movement has grown
with millions of believers trying to eradicate poverty worldwide

There are always downsides, niggles which urk
a sudden run on shares can throw millions out of work
the systems of trade and industry don't give prizes to the losers
it is a clinical, scientific, unsentimental approach to serve its users
where our feelings are subsumed by our metabolic drives
but it's one that has given us our 7 billion lives

Dandy and I are off to visit Don in Southsea
he's in his new apartment at Carol's, which looks lovely
with spacious living room, bedroom, bathroom, kitchen and study

Don seems happy here
Carol and Duncan are away for new year
but the three of us laugh and spread seasonal cheer

How's the writing going, Don asks me
as he understands it, the first parts explore
the cosmos, biology and humanity, while part four
is whatever I may have learned from the first three
so he suggests the word 'help!' – just that, no more
I smile nervously

Dandy loves this little tease
and they roar until they wheeze
at midnight we call Dublin, happy New Year Denise!

Here's to Keith and Don, facing new lives
their partners and now their houses gone
as this new year arrives

In a Special Report, Claire Rowan, the queen
of 'Food & Beverage International Magazine'
gives a flavour of how these commercial forces
all do their darnedest to steer the right courses

She says "the world's leading food and beverage manufacturers
are continuing their recessionary tactics and cost-saving exercises"
in "a drive for international expansion" they're spreading their nets
"in a bid to capitalize on opportunities for growth in emerging markets"

"Macro economic drivers are reshaping the face of the industry like never before
with many of the big players now deriving over half of their income"
from outside the home markets at their core – a clever plan
and there's more, for "the Top 100 list welcomes some
new kids on the block from Brazil, China and Japan"

Danone has entered into a joint venture, to further its concerns
with Russian Unimilk, since, like all major players, Danone yearns
"to invest in markets with high growth potential and rapid returns"

Overtaking the U.S.A. in 2012, China is set to become the largest grocery market, while India's contribution will place it 3rd, according to the latest figures from The Institute of Grocery Distribution

“Nestlé has just partnered with Chinese company Hsu Fu Chi which produces cereal-based snacks, packaged cakes and sugar confectionery” while, joining its Mexican bottling forces with GEUPEC, PepsiCo is also forming, with Venezuelan giant Empresas Polar “a nationwide beverage company in Mexico” Kraft Foods has just invested \$200 mill in expanding manufacturing in Brazil

Yet, in those emerging countries “lead players are themselves tapping into external market opportunities”

“Brazilian meat protein company JBS has shot to the number 6 slot” acquiring Swift in Australia, Argentina and US extending its beef and pork sectors, adding to the pot with Smithfield's beef business, Pilgrim's Pride, to get into the chicken market while Brazilian meat group, Marfrig, it appears has “made more than 40 acquisitions in the past four years”

“A rocketing growth in dairy activities sees the arrival of the Chinese dairies Mengniu and Yili at number 72 and 88 respectively”

“The increasing globalization of all players coupled with the backdrop of raw material price volatility an uncertain economic future and growing environmental concern is bringing new pressures, challenges and opportunity” and so we live and learn

The self-organizing system of our trade and industry is evolution in action, the spearhead of our progress our communal bloodstream, our measure of success but with all this burgeoning worldwide business providing work, money, products and services running all our wealth-producing operations what's the point of having nations

3 Nationhood

Ominous weather

I have lessons, but no two coming together
hours of gaps, so this is my chance to discover perhaps
what's good about nationhood

According to current calculations
there are some 200 nations, some mighty, some meek
shaped by their terrain, their culture and each of them unique

A sovereign nation, like a corporation
is a virtual manifestation, it stands alone
it isn't the people or leaders, who come and go
nor the land, which folk or firms may privately own

Its first priority is defense of the realm
its 2nd maximising wealth for all, or for those at the helm
while, as well as promoting its industry and defending its border
internally it must deliver law and order

While these priorities make the country stable
and optimize the nation's wealth
states may not care, or even be able
to ensure their people's health

Sometimes whole populations suffer
wars are waged, lives are lost
wealth is wizarded away, folk pay the cost
it happens practically everywhere
everyone knows the state of play
but if nations don't really care
what good are they

On the Horn of Africa
Somalia is a sovereign state but it isn't
while Somaliland isn't a sovereign state yet it is...

Somalia is an arid land and as hot as it gets
shepherds with their sheep, fishermen with their nets
live in pastoral nomad clans, Somalia is known as a nation of poets

When its military dictator is overthrown, the country descends into clan warfare fighting, famine, disease have taken a million lives, it's one of the most violent places anywhere while its shoreline has tons of nuclear and toxic waste which foreign firms have dumped there and Somali fishermen, seeing large foreign trawlers steal the fish from their sea begin boarding, exacting a 'tax', leading to large-scale piracy in 2011, a drought leaves millions on the verge of starvation and that's the current situation

Somalia is what happens when a nation isn't a nation
the sun may shine
but without law and order, there's no organisation
stability is the bottom line

Meanwhile, the people up north are working to create
Somaliland – an unrecognised, self-declared sovereign state

Clans drew up a constitution, defining executive, legislative and judicial responsibility and delivered a multi-party democracy, with a stable, if unrecognised currency while émigrés abroad send home about a billion US dollars annually there are public services, water, buses, education, electricity airlines operate internationally, a budding tourist industry flies people in to see its cave paintings, its Ottoman architecture the allure of its mangroves, coral reefs, towering cliffs, beaches and boats and its nomadic culture – this is a country of 3 million people and 10 million goats

With organization, with UNICEF promoting girls' education with micro-credit schemes set and two women in the cabinet there is fierce social debate, including Abdale Farah Sigad's sentiments "while Somaliland people are happy to show they care about their independence their tribal way of understanding" puts the tribe above the state, hence Abdale's call to "speak the truth, because in my humble opinion, the national interest serves for all"

So nationhood is a cure for tribalism and the basics will do defend the border, optimise wealth, enforce law and order or chaos will ensue – but for social developments, says Abdale serve the state without favour or hypocrisy, develop democracy

By contrast, Omar Al-Bashir rules Sudan with an iron hand pillaging, murdering, raping and torturing, all opposition banned Kim Jong-il's Korea is full of labour camps, while Kim himself lives lavishly some of these nutters have some style, Turkmenistan's Niyazov was even funny renaming the months of the year after members of his family blissfully unaware of suffering humanity

Preparing for my first lesson to start
is a pleasure, Trish has a warm heart
she's all of a bounce and a twinkle today
I've met one of your students, Kevin
oh, Kevin, I'm seeing him later, I say
she grins, it's okay, I know he's gay
as she sits at the piano and begins to play

When we first meet, she can't sing, hardly speaks
and it's in a whisper, after some weeks
that she says she been abused and beaten for years
and, whispering sorry, bursts into tears

A year on and she's got a job, her own flat and she can sing
as she flounces out, she tells me she has a gig this evening

Only democracy
removes the tyrants permanently
that's what it's most useful for
you can change government
without a bloody civil war

The Arab Spring sees demonstrations across the Middle East and North Africa
in Egypt, Libya, Yemen and Tunisia, rulers are forced from power
from Syria to Algeria, a common slogan and constant theme
is 'the people want to bring down the regime'

Not that different cultures will make the same choice
Britain uses democracy to deliver a secular state
Tunisia chooses Islamic rule, the point is a people's voice
in a healthy democracy, conflict becomes debate

From Gobi Desert to frozen north, a third of Mongolians are nomadic, following their tracks
with their sheep, goats, reindeer, camels, golden eagles and yaks, yet all receive full education
once part of the Russian Federation, Mongolia's transformed into a thriving democratic nation
and with riches rising at 17 percent per year, one of the world's fastest-growing economies
with trillions of dollars-worth of copper, coal, uranium and gold, its wealth is immense
yet Gee, a national star, raps of Genghis Khan's land gobbled up by voracious Chinese
its grasslands and water sources lost or polluted, while a few are better off by far
since government corruption is widespread – an observer notes the difference
that exists between "the poor, like a besieging army around Ulaanbaatar
and these very rich people with their million-dollar apartments"

So, corruption in a democracy – well, it may be wise
to go democratic, in order to fuel private enterprise
so those in power can take the money legitimately
but Mongolia's in its infancy

Sweden is fourth on the EIU's index of democracy
with Volvo, Sony Ericsson et al, it does its business privately
yet has the world's highest level of social welfare spending (compared with GDP)
and one of the smallest gaps between rich and poor – how perfect can one nation be

One democratic hazard, coined by Adams in the 18th century
is 'the tyranny of the majority', where a majority oppresses a minority
using democracy to form islands of prosperity, where lives are blessed
surrounded by shanty towns of the dispossessed

Until the 1970s, the Swedish government exemplifies this state of disgrace
forcibly sterilising thousands of women for mental defects or for being mixed race
the democracy worked, it's just that democracy offers no protection
against the majority's natural selection

Even a leader who wants to do all that the people ask
to improve their health and wealth, may face an impossible task
on South America's Pacific coast, Peru is a land of treasures, blessed
by Lake Titicaca, Machu Picchu, the Andes and the Amazon rain forest
and, like Mongolia, it's boom-time, exporting its coffee, sugar, rum
cotton, copper, zinc, gold, silver, lead and crude petroleum
but in rural areas, people say that this causes pollution
uses up their water and offers no solution to poverty
yet this is a democracy, where voting is compulsory
so social reformer, Humala, assuming the presidency
in mid-2011, vows to eradicate poverty and social exclusion

The 'People of Peru Project' describes Iquitos, deep in the Amazon
and the condition of 600,000 people plagued by disease and malnutrition
even in Mr Humala's first months in office, dispute and conflict are on the rise
five people are killed during protests against a huge mining enterprise

He wants to stop poverty
corporate industry is the only cure
and with 80% of his electorate living in the city
the people who suffer are the rural poor
which seems a cruel policy to pursue
but what's the poor man to do

Doorbell rings – hi, I'm Alice
flashing a smile that looks more like malice
she barks commands and orders at me, controlling it all
play this, play that – wait, I'm recording it, hang on I've got a call
Piedro? I'll call you back, what? – well tell him I can't be arsed
okay, kisses, bye – right, now play it, no that's too fast

She thrusts song after song in my face and says play
then, when she's recorded them all, she waltzes away
she's not satisfied with the way I play and refuses to pay
good day

The public always rails against politicians, calling on them to quit
the question's not whether they're doing what they should
but whether the majority likes it
yet the people aren't necessarily 'good'
most people vote to serve their own benefit

So, overturning the feudal pyramid, people, by voting
a government to guide and provide them with everything
may become as powerful and perhaps as corrupt as a king

The divine right of the public can be just as greedy for more
as self-regarding, cruel, ruthless, quite capable of sanctioning war
then (as in UK and US, once the deals in Iraq are done)
blaming the government and voting in a new one
got to bend the rules – we need fossil fuels

We democratic citizens
wear our opinions emblazoned upon our chests
without fully understanding the situation
gladly swallowing misinformation
if it serves our point of view
protector of our self-interests

It's doubtful if we can be as vigilant in our democracy
as Churchill says we must be, were we really the master
it would likely lead to disaster – luckily we're not in charge
skillful leaderships and media present the public at large
with suitable irrelevant options, to discuss from day to day
in a blissful suckling state, which is our preferred state anyway

One of the upsides of democracy is said to be equality
gaps between richest and poorest are said to be indications
the USA has the fourth largest gap on present correlations
while the UK, Australia, Portugal, Ireland, Greece and Italy
are democracies all and some of the least equal nations

Perhaps that's not an anomaly
since private enterprise is the democratic ideology
and equality is not something that private wealth can obtain
while democracies also readily export 'democracy'
by military means, for financial gain

Vietnam's communist leadership, however, does not depend on voter support
in a land of mountains, tropical forests, Buddhism, Taoism and Confucian thought
after the Vietnam War destroys its traditional economy, based on wet rice cultivation
millions are employed in government programs to revitalize and industrialize the nation
now, free market economic reforms in place, with its expanding high-tech and IT industry
and as the third-largest oil producer in Southeast Asia, Vietnam is another booming economy

Deep poverty has declined significantly due to the government's policy
of egalitarian land distribution, of poor and remote areas receiving subsidy
education and healthcare nationally, while women MPs discuss women's equality
also, with 16% of the world's creatures and 16,000 species of flora identified
the government provide millions annually to preserve its biological diversity
with the Cultivar Gene Bank and 126 conservation areas and parks nationwide

Vietnam is not a democracy, yet presumably
it really doesn't matter what the system might be
if the administration really serves the whole society

Lady Malice is still making me foam
so Kevin's clear eyes are a welcome sight
he works long hours in a local care home
and runs a Kemptown karaoke night
since he's found he's got a 3½-octave voice
and can sing any style, any song of his choice
he's a person who sees what others need
and invisibly, quietly takes the lead
he mentions Trish, with some delight
and it turns out it's his place she's singing tonight
I can't talk about Trish, but a look lets me know he's aware
then he sings Freddy Mercury till I'm in ecstasy
oh thank goodness for people who care

In my youth, people's problems are often blamed on 'the system'
but selfish folk will conjure up a selfish world, take the rules and twist'em
really it's how people relate – it's the culture that characterises the state

From its lush tropical rain forests, to Kuala Lumpur's soaring skyscrapers, Malaysia
is a multi-ethnic, multi-cultural fantasia, government and legal system based on the UK
where even the King is elected for 5 years, by and from the nine hereditary rulers of Malay
a growing economy for over half a century, with burgeoning electronics and defense industries
the nation has its own space programme and all its 28 million citizens now carry smart-chip IDs
Malaysia has a fifth of the world's animal species and a third of the realm is covered in trees
but animal trafficking is widespread, while cultivation and logging in this land of plenty
have cleared rain forests on the Peninsular by sixty, on Sarawak by eighty percent
such that, at current rates, the forests are predicted to be extinct by 2020
and government is accused of favouring business over environment

Again as in Peru, people want better lives, so industry arrives
cuts down all the trees, the poor come pouring into the cities
wanting better lives, so people fuel the market and the market drives

Overall, there are the traditional Western democracies
the communist countries, some of which are both successful
and responsive to their people, then nations which are feudal
several in the Middle East, where wealth and power is ancestral
like Saudi Arabia, where the royals own the whole caboodle

There are hopeful Latin American administrations
where democracies now thrive, many led by women
then the desperate, despotic state of so many African nations
umpteens dictatorships, some, like Chad and Zimbabwe, going under
Eritrea's human rights violations, others, like Ivory Coast, rent asunder
by civil wars, and historically perhaps, all due to endless foreign plunder

The strengths of nationhood are stability
food, shelter, work, fair play and opportunity
ideally, a place where community thrives
a beautiful place where we can live beautiful lives
easy to achieve, whatever the structure, if we all agree
unless outside forces affect us so powerfully
that nations cannot steer their own courses
are nations controlled by market forces
are we able to choose, or are we led
rain beating down on my little shed

4 One Happy Family

The year has begun with angry clouds tipping their load
whipping winds in Brighton of 80 miles per hour, day after day
ripping the flashing off the shed, flipping my motorbike into the road
I'm feeling unfocussed, unsettled, a bit lonely perhaps, with Denise away
and pissed off trying to work out what all these international bastards have to say

International affairs are unique
as a minefield of political doublespeak
each nation presenting its endless appeals
diminishing others, purveying its infinite glory
while the experts, whether from political ideals
or because a partisan view will make a better story
manage to fill hundreds of pages justifying their vision
arguing with other experts in a game of death by definition

Having had to rip up some of these tomes for the good of humanity
it seems that spin's a part of it and no matter the view, whatever the vanity
you can look through any window and see all the flags of internationality unfurled
so I'm looking out of Martin Jacques' window
"When China Rules The World"

"On December 26, 1991, the Soviet Union died
and something new was born, a unipolar world
dominated by a single superpower"
crows US columnist Charles Krauthammer with pride
since the United States of America now towers worldwide

The Western view is that globalization
means that every other nation will follow where we lead'em
human rights, democracy, free markets, private wealth and personal freedom

Meanwhile 2,500 years ago, China emerges as a centralised state
with a sophisticated statecraft, as the teachings of Confucius create
a family structure based on children's respect and equally
on elders who encourage and protect
under the Mandate of Heaven
one great happy family

This is not merely a sovereign nation
China is a civilisation

In the West, the state is viewed as an artificial construct, almost an imposition
whose powers people seek to constrain, and view with a certain suspicion
while in Confucian lands, the state is not seen as something surplus
but as a natural and intrinsic part of the common purpose

In the West, the power of society is driven by each individual's quest
for individual autonomy and identity, without others intervening
while in East Asian culture, it is through community
that a human being finds security and meaning

Chinese are optimistic about human nature
believing that people are essentially good
and that, by bringing their kids up right
they'll be a credit to the neighbourhood

Everyone has their place, fathers, mothers, sisters, brothers
it is through the family that people learn to defer to others
learn a complicit way of seeing to serve their well-being
and within this hierarchy of mutual respect and duty
the government is simply mummy and daddy
under the Mandate of Heaven
one great happy family

In the West, people value a government's consistency
whilst in China, the higher quality is flexibility
a sign of wisdom in the leader of a nation
China is a civilisation

With a "biological conception of citizenship" Chinese trace
their human genesis back to a unique human line, 'Peking Man'
while the extraordinary longevity and continuity of their history
has spawned the historical myth, that the Han are a single race
under the Mandate of Heaven, throughout time and space
they have always been and will ever be
one great happy family

Racism is a 'white problem'
Chinese superiority is simply innate
Jacques says treatment of Tibetans exemplifies this trait
and warns that nations within the web of China's administration
"will occupy a position of cultural and ethnic inferiority or subordination"
for China is a civilisation

China does not depend on physical coercion, but on moral unity
historically, the Imperial bureaucracy embraces these moral choices
and faces no challenge from church or gentry, while neither peasantry
nor tradesmen form independent power bases or institutionalized voices
since, mindful of good government, the Imperial state heeds the call
of the Mandate of Heaven to ensure the livelihood of all
as for 2000 years China is united
while Europe is divided

In the late 13th century, Marco Polo observes the Yangzi river
“truth to tell, the amount of ships and the goods they deliver
the sheer volume of the traffic and the value they contain
exceeds all the rivers of the Christians put together
and their seas into the bargain”

In 1776, Adam Smith, author of *The Wealth of Nations*
says “China is a much richer country than any part of Europe”
yet it becomes a ‘sleeping giant’ with capitalism’s transformations
until, in the 1840s, a ‘century of humiliations’ begins with the imposition
of the Brits in their ‘Opium Wars’ bombarding South China into submission
it’s pushed around by France, Russia, the USA and has to watch Japan take
Korea, which is relatively minor, but then a great swathe of eastern China
as Emperor Napoleon says “the giant sleeps, and let it
for should it wake, the world will shake”
yet for now, this great civilization
suffers shrivelization

A light comes on indoors
through the storm I see it’s Dandy
she waves at me, I shut up shop and run in, wetly

Inside, my lovely kids are happily
jabbering on about the evils of the world, it’s terrifying
how the US is planning global warfare and all the fish are dying

So I say, look we know all this
you’re young, do something, make the world beautiful
so Sam gives me a million reasons why that’s impossible

So I switch off and let them swap atrocities
I don’t like thinking about it really
there are always endless animosities
drown them out, switch on the TV

“Growing inequality, environmental decline
and ‘teetering’ economies require a change in attitudes
the world must change the way it does business, a UN report concludes”

The screen flashes up hoards of battling Greeks – oh thanks
they’re protesting because austerity measures are biting
so now Sam and Dandy are ranting on about the banks
and I’m watching people fighting

I call Denise, we’re both lonely for each other
I say I’m with the kids, she says she’s jealous
each of her babes chats with their mother
then back in my ear, she heaves a sigh
she’s just about to go onstage
we kiss goodbye

Sam’s treating us to a takeaway, says Dandy
we move the sofas so we can all see the TV
turn off the top lights, the food arrives
and on goes the Laurel and Hardy
one happy family

After Mao’s Long March, with the people’s mandate
with immense support from the rural community
China embraces the Communist Party
Mao’s lasting legacy is great
the return of the country’s sovereignty
its reunification and the reconstruction of the state

The Party attacks many traditions
including Confucian notions of hierarchy
the long-standing oppression of women, rural conditions
carrying out sweeping land reforms, all in the name of equality

For all the differences between Confucian and Communist ideas
there are also important similarities, it appears
not least the state’s moral responsibility
its role in economic and social security

With Mao’s death in 1976, Deng Xiaoping turns Chinese eyes out
to meet the world and, in the turnabout, suddenly this
civilisation is open for business

Peasants are given control of the land on long leases
encouraged to market their produce and, as this decentralization increases
government budgets shrink, economic growth rates double and halcyon days arrive
with membership of the IMF & World Bank, China's transformation moves into overdrive
Chinese exports increase rapidly, an economic fever begins to grip the country
tens of millions leave rural communities for urban bliss
this civilization is open for business

In the 1990s China transforms its international relations across south-east Asia
with the Philippines, Singapore, Thailand, Brunei, Indonesia and Malaysia
creating a market of almost 2 billion people's labour, where trade is free
so most nations in the region now see China as a good neighbour
in one vastly extended happy family

The two great exceptions are Taiwan
whose return is non-negotiable, and Japan
whose invasion and occupation is still painful to the Han

Yet China is open to all and nations clamour to its call
South Korea, Cambodia, all states that end in 'stan'
Russia, India, Mongolia, Vietnam, Iran and Pakistan
forging plan after plan with countless administrations
in 2001 China officially announces its 'Going Global' strategy
forging ever-closer ties with many African and Latin American nations
with the Middle East, with Central and South Asia, in one vastly vast happy family

While China is poor in natural resources, Africa is rich
In 2006 Hu Jintao tours 48 African countries, making his pitch
to double its assistance, encourage Chinese companies to invest
with billions of dollars of loans and credits to Africa's treasure chest
canceling debt, training local professionals, building hospitals, schools
sending over experts, as China relieves Africa of its timber and fossil fuels
whereas the World Bank and IMF insist on trade liberalization, on privatization
and a reduced role for the state, the Chinese say it's wrong to decide for a nation
this they see as the invincible principle of sovereignty, China after all is a civilization

China now imports more Sudi oil
than the US, with a local representation
of twenty-thousand Chinese workers who toil
on behalf of no less than 90 Chinese companies
all employed in this Chinese-Saudi Arabian arena
while the China Railway Construction Corporation
is delivering high-speed rail between Mecca and Medina

China and Iran are both civilisations, perhaps the greatest
so it is only natural to treat each other reverentially
both have also suffered at the hands of the West
so Iran gives oil, China its arms and essentially
trade is growing exponentially

India and China are both vast superpowers in economic transformation
accounting for almost 40 percent of total human population
yet Chinese tend to look on Indians with derision
while Indians view Chinese with suspicion
pointing to a total difference of vision

China, a powerful unity, a singular identity
India, blessed with pluralism, is a democracy
in which languages, races, religions are blended
yet India's dominance in its own region has ended
now surrounded by states that China has befriended
their trade is unequal, iron ore for high tech, bestowing
a burgeoning trade surplus for China, as cash keeps flowing
till China's economy is four times the size of India's and growing

Europe is far less than the sum of its parts
its share of world trade slipping, its influence minor
in any geo-political display, it'll side with the USA
at least while the USA is stronger than China

By 2007, China has 3 of the world's 5 largest companies, while the world realises
that its corporations are 'hybrids', combining both private and national enterprises
exposed to the fiercest competition, many with private investors, including its banks
with the one-hundred-and-fifty state-owned firms, rising up through the world's ranks
this is a new kind of capitalism, where the state's hyperactive, omnipresent, a new vision
especially in the developing world, this Chinese model may become an attractive proposition

When the financial crisis hits, China uses a \$580-billion stimulus package, to invest
big-time in health, education, roads, infrastructure and while the public are blessed
encouraging domestic consumption, to compensate for falling demand by the West

In 2010, after a wave of strikes spreads across Guangdong Province, the government appears
to change tack, with huge wage increases, improved conditions allaying workers fears
in 2011, China becomes the largest manufacturing country there has ever been
it has also achieved the greatest poverty-reduction programme ever seen
with those living in poverty falling from 250 to 26 million in thirty years

That China and the United States see eye to eye
is central to foreign policy as the 3 decades roll by
and while both have sought to play down, even deny
that the global financial crisis, beginning in late 2008
marks a turning point in how the two nations relate
in terms of economic power, this is no minor drift
from the USA to China, this is a major shift

“On December 26, 1991, the Soviet Union died
and something new was born, a unipolar world
dominated by a single superpower”
crowds Charles Krauthammer with pride
and, with the Mandate of Heaven on its side
what nation finer than China

If so, it may be that the introduction of a strong, morally responsible state
into free market capitalism might create a new way to operate
to solve the increasingly pressing problems of humanity
the cowboy mentality has been great for globalization
but not for its consolidation, yet China might lead it
it may be good to become one big happy family
lord knows we need it

In order to see how systems work, I’ve avoided stuff, stuff I dread
not just Mr Rich and one poisoned river or one massacred tribe
but the scale of it, the global picture of the dying and the dead
with ‘legal entities’, companies and states in pursuit of wealth
riding roughshod over humanity and planet, as if we’re led
as if the process is more powerful than the people
as if the stomach rules the head

If self-serving folk monopolize each realm
and market forces overwhelm
we’re surely stricken
who’s at the helm
are we one vast virtual headless chicken

For all the glories of technology
world trade, nationhood and diplomacy
with the power to destroy ourselves environmentally
or with a few well-chosen bombs, it’s not surprising
that the stakes are high
and rising

5 It's the End of the World!

Denise and I are not getting on
it's nearly four months she's been gone
isolated, I end up resenting her need to roam
while her problem is loneliness, so far from home
can't I see how she's helping us financially
I can, but dumping on each other
we can't seem to find the answer
maybe I should just drive up to her

On the first page
of Speth's 'Bridge at the End of the World'
are sixteen graphs, analysing the rise of the modern age
all chart the same course, exponential growth, exponential damage

He goes on
half of the world's tropical and temperate forests are gone
deforestation in the tropics is reckoned at an acre a second
half the wetlands and a third of the mangroves are gone
20% of the corals are gone, 90% of the big fish are gone
species are disappearing at 1000 times the normal rate
only the dinosaur extinction event is commensurate
persistent toxic chemicals are now multitudinous
within each and every one of us

...Why do I have to read this shit
why am I rubbing my nose in it
when the truth is, there's no cure
if you can't change human nature

Relative to nature, human impact is now great
atmospheric CO₂ is up by a third and at this rate
the planet warms, climate changes, ice fields melt
and there's nowhere that these changes are not felt
we now eat or destroy about 40% of all plant life annually
freshwater withdrawals are double, now half the runoff globally
while in the dry season, the Colorado, Yellow, Ganges and Nile
are among many rivers that no longer reach the sea
the reasons, population growth, abject poverty
(affecting almost half of us apparently)
our values and our economic activity

So we're greedy, we're nasty, we're cruel, we're mean
we're just about the worst things we've ever seen
there's no point you telling us to be good and sweet and pure
cos you can't change human nature

Now he's telling me what's wrong with capitalism
that it's bound to do what profits it, as a legal entity
more wealth more people, more people more wealth
as the system of world economy fuels up exponentially
on and on, until the natural world we depend on is gone

He blames the separation of ownership from management, limited liability
that companies have preferential legal status while human rights are lost
the sacred duty of directors to maximise corporate profitability
and the externalisation of any environmental or human cost
the 35,000 Washington lobbyists are no doubt useful tools
while business owns the media, indoctrination rules

Of the 100 largest global economies, 53 are corporations
Exxon alone is larger than more than 180 nations
removing real power from government
until countries are now subservient

They said back in the 70s that all this would occur
and now it has, cos you can't change human nature

Daniel Bell says economic growth is
'the secular religion of the advancing industrial societies'
consumption spurs growth, so people must buy, it's never-ending
as the New York Times explains 'Why Americans Must Keep Spending'
since it's given that people's health is dependent upon corporate health
so the Financial Times observes 'the stamina of shoppers will be crucial for global wealth'

A group of young women develop a new product with lots to give
called Nothing, it's "100% non-toxic, family-friendly, fun and creative"
it's sweatshop-free with zero waste, non-global-warming, eco-tested
these young women, selling Nothing in a shopping mall, are arrested

Tim Kasser says that when things are valued more than people
a psychological cycle can lead to alienation, pressure, stress
Ed Diener believes that "materialism is toxic for happiness"
in 50 years, depression's up 10-fold, no sign of it stopping
meanwhile feeling depressed can be redressed by shopping

Robert Lane says we get happiness mainly from others, feel elation
when they like us, frustration when their affections cease
certainly ‘every man for himself’ is bound to breed alienation
Speth observes “beyond a modest salary, happiness doesn't increase”

In the light of this, he suggests we “transform the market
to make it work for the environment”, develop a ‘post-growth society’
where “neither nature nor community is sacrificed to the priority
of economic growth” while shifting taxes to target sustainability
we are running out of nature and there is cause for alarm
“it should be very expensive to do environmental harm”

Because shareholders possess and control companies for their own financial gain
companies can't include the social and environmental costs required to sustain
our lives on this planet, so these legal privileges cannot be allowed to remain

Roll back limited liability, so investors are liable for the damage they create
(is he serious, who's going to invest when environmental costs escalate)
eliminate corporate ‘personhood’, put a stop to their cost-cutting tricks
and get them the hell out of politics before it's too late
after all, a corporation is a fiction, created by a state
we can re-charter corporations with a broader public role
does he mean more like China, how do we approach this goal
who's going to wave this magic wand, I mean, who's in control

You can't recharter corporations without rechartering the nations
and you can't recharter nations while controlled by corporations
the system may be going crazy but who is able to rearrange it
where things are going wrong, people are victims in a storm
where things are going right, there's no incentive to reform
business fuels us all, so where's the power to change it
it can make people rich and it can make people poor
it can turn a river into a sewer but we'll endure
while there's no cure for human nature

Denise calls and I'm just listening and listening some more
yes I say, yes I know, well because you've told me before
yes but how can I help, then why are you telling me this
so they're mean, okay, so that's the nature of the biz
well obviously if your back's gone, you can't go on
is it, do you want me to drive up to you
are you sure, well then what can I actually do

So you're saying there's nothing I can do in reality
I'm not being belligerent, you're the one who's in a tizz
yes you are, I'm just working and you're dumping on me
it isn't evil – the phone goes dead, oh fuck, I'm sick of this
oh let her stew, sometimes you've just got to say it like it is

Back to work, head full of why I'm right, she's emotional, I'm the realist
time to 'Occupy World Street' with Ross Jackson, a fucking idealist, intent
on delivering a clear plan and roadmap to 'global Gaian government'
he says "the most fundamental change" from the old worldview
"is that the earth is seen to be a living organism", humans too
with minerals, microbes, an integral part of this living brew

While, from G20 and Occupy protests, to the Arab Spring
we see "a significant shift in attitudes" happening
I've watched these global movements start
strange how ideals can stir the heart

Gaian world will be social
neither divisive nor abusive
it involves a single, simple shift
from the exclusive to the inclusive
changing our way of seeing, the thought we give
to social problems, health, wealth and whether
everyone else is okay, the way we live
will be together

There is no waste in nature, an idea which we include
in Gaian society, where corporation-cooperation is pursued
such that one company's 'waste' is another company's 'food'
ultimately we are limited by the biosphere's carrying capacity
yet presently nature has no value, price covers extraction only
like Speth, Jackson says social and eco costs must enter the tally
while also using quotas, bans, taxes and subsidies, not to disarm
but to establish boundaries for private enterprise without harm

Jackson's blueprint is detailed, a chapter on each institution's role
showing how the books will balance, how the parts fit into the whole
democratic and accountable, he describes how we'll woman-and-man it
instead of safeguarding private profits, safeguarding humans and planet
instead of a race for reward, he describes an affair of the heart
and it tugs a cord, perhaps me being cynical isn't so smart

At the top, seven billion world citizens elect Council, with powers to contest
and overrule any law of Congress not in the planet's long-term interest
below the people's Council, the Congress, an assembly of delegates
appointed, like the UN, by member states, legislates
the Commission oversees how things are run
while the Court of Justice sees justice done

Beyond these, the creation
of four centres of Gaian administration
the Gaian Trade Organization, its crusade
to put sovereign nations back in control of trade
while the Gaian Clearing Union will regulate industry
internationally, without recourse to national currency
averting potential financial crises, cooling market nerves
meanwhile freeing up substantial foreign-exchange reserves
which will fund the Gaian Development Bank, whose task will be
providing loans to finance developing countries locally
lastly, the Gaian Resource Board administers and endorses
members' use of both finite and renewable resources
as this citadel of kindness rises, as Jackson begins to chart
our journey towards Oz, all these helpless feelings start
and I can't stop him warming the cockles of my heart

Jackson suggests a small group of like-minded states might found
the Gaian League, leaving the WTO for the GTO is the only turnaround
they need, with Council elected and delegates to Congress, they can begin
they needn't leave the IMF, World Bank or United Nations
nor commit to the other 3 Gaian organisations
where associative status might be a way in
but people on the streets, making a din
demanding a future for their kith and kin
hold the key, and while they may be of like minds
a founding group is likely to include nations of all kinds

*Bolivia, a poor socialist country with enormous resources
may link up with another Spanish speaker
producing 90% of its electricity through renewable sources
the 'greenest' country in the world, Costa Rica
and they'll dance around the fire – of Gaia*

*They in turn may want to shack up with a very nice land
where human development's high on the list
and form a tryst with Iceland*

*The three of them may hanker
for the tolerant Buddhist democracy
that supports its rural community
and can only be Sri Lanka*

*And who's this marching into the fray
one of the wealthiest nations today
are you coming to join us, we say
yes, cries Norway – hooray!
sing Gaia!
all classes, all breeds, all faiths, all creeds
and all kinds of crazy attire*

*Who can this be, trying to struggle free
of IMF and US dependency, with people its priority – hello sailor
what ho, it's oil-rich Venezuela
and who's loping out of the barn
a Buddhist state that measures success
on the basis of "Gross National Happiness" – yes, it's Bhutan
and that's not all
here's a well-governed Islamic country with advanced information technology
blimey, it's Senegal*

*As they dance around the fire, more and more nations aspire
some are wetter, some are drier, some are fabulous, some are dire
all are Gaia*

*Here's a prosperous land, sick of the tricks
of neo-liberal economics, what's this wee land – it's New Zealand
and now the mood gets dizzier, with delicious Mauritius and Tunisia
and even crazier with Malaysia, while in the Alps there sits a land
called Switzerland*

*As the Great League rises, countries of all shapes and sizes
the whole darn team, sharing a dream, whirling ever higher and higher
sing loud the heavenly choir – sing Gaia!*

Jackson goes on to describe the pragmatic and democratic process essential, as "the very nature of the Gaian worldview is inclusiveness" "the Gaian League is nothing if not ambitious" he says, yet at its core it's an open-ended proposal, we need to debate and explore some more Ross Jackson was born in Canada in 1938 and moved to Denmark in 1964

My reaction is, it's great, even if it doesn't stand a chance, Jackson sets it out so clearly
with such intransigence, this is wrong and this is how it shall be, almost comical really
yet his facts and figures can't hide the fact that he cares about it passionately
and I feel so good inside when he makes me believe in the possibility
of these global movements and all these countries making a start
if only I could cope with hope, be still my beating heart

In the 60s there was massive desire for change, but no roadmap
Ross Jackson presents a practical plan and plops it in our lap
while the world wide web presents a new situation
with instant individual conversation
where each of us knows what's going on
the matrix of minds can see what's to be done
rather than letting some bossy authority overwhelm
personal global communication puts people at the helm

As an increasingly conscious super-organism
our finite resources will factor out egotism
by gradually resolving conflicts of interest
and that's all Speth and Jackson suggest
a single unselfish system

Problem-solving is innate, as is thought, so innovations do not cease
families encourage and support, so personal freedoms increase
while what we see as progress, depends on what we value
we no longer think that slavery's an okay thing to do

People do change, change all the time
pull together most, when we're pulled apart
so we will endure, it will only take one tragedy to cure
any lack of commitment in human nature, but if we're smart
we'll achieve what Erich Fromm calls "a radical change of the human heart"

The phone rings
it's Denise saying sorry
I'm sorry too, no it was me
my fault honestly, I'm coming to see you
yes tomorrow night, I'll pick you up after the show
I love you too, so much, yes I will, I know
and we will stay closer in touch
bye darling, thank you for calling
I sit for a while in a strange new state
why do I suddenly feel so great

6 Conflict

*“there is no way to peace, peace is the way” A. J. Muste
“to war! to war! at last we’re going to war!
a’hid-y-hidy-hidy-hidy-hidy-ho!”
Marx Brothers/Kalmar & Ruby*

War is a ‘holy cow’, almost undiscussable
whether it’s human evil or only natural, it’s full
of hot emotions, cold detachment, instant tension
a domain of such human self-delusion and invention
that it cannot be unmasked, which I suppose is the intention

Over two-hundred-million people die in 20th century conflicts
mostly unarmed people, dying in their increasing millions
1st world war 10%, 2nd world war 50%, Vietnam 70%
by the Gulf War 90% of those killed are civilians

With increasingly sophisticated war machines
we can do the deed on a vast scale with great speed
far from the upsetting scenes, by ever more remote means

A man kisses his wife and children and drives off to work for the day
where he navigates a surveillance plane in a war thousands of miles away
after a tough time at the computer, having done his duty, pinpointing the enemy
and relaying their courses to bombers and ground forces
he goes home to his proud family

The US is presently drawing up plans
for nuclear-powered robot planes, supplied
with non-US remotely-piloted armed assassins
alienation is a key to success in war and genocide

Trying to discover what all this murder may be for
I’m amazed to find there’s something called ‘just war’
moral thinkers down the ages have struggled to explain
war requires a good purpose, rather than self-gain
to prevent a greater evil and as a last resort
not as revenge nor for sport or blood-lust
and if the people oppose it, it isn’t just
civilians are immune, not to blame
moral rules define the end-game
but war is just in just one sense
self-defence

Just war, however, is always purloined by aggressors, who try
as a marketing tool, to legitimise attacks on foreign lands
the 9/11 bombings, where perhaps three thousand die
justifies a 'war on terror' killing hundreds of thousands
and just as children fighting in a playground will cry
'he started it miss', nations cite self-defence
even though we see through the pretense
it's obvious when Arabs start to execute plans
in Sudan to rub out all the sub-Saharan Africans
it's obvious when corporations allied to invading forces
are signing contracts for the soon-to-be-defeated state's resources

Here 'just war' is like a silk glove on a fist, its power is to scare
we prefer to see the glove and so accept the good scenario
precisely because we know the fist is there
there may be nothing to enhance the blood and gore
but nor is there an answer, it's just war

Wealth and power are the real
practical purposes of war and genocide
the state is traditionally the Landgrab Agency
grabbing land for the wealth and trade it will provide
Pilger describes the collusion between US and UK leaders
and their corporate heads in the 1960s, which led
to the liberation of Indonesia's huge wealth
resulting in half a million dead

Genocide is often put down to ethnic hatreds, so old
feelings so irrational, so deep they cannot be controlled
whereas, in reality, it is orchestrated by leaderships to obtain
economic wealth, political power, regional control or a new domain
whether that's the Nazi plan or Saddam Hussein in Iraq and Kurdistan
Yakubu Gowon in Biafra, Pol Pot in Cambodia or Brezhnev in Afghanistan
it's the same refrain, racial hatred is stoked for gain and at its core it's war
yet any connection between war and genocide is always vehemently denied
probably because it would be hard to sell the idea of 'just genocide'

Yet there are many good sides to war, many reasons to say yes
there's wealth and power, technological and often social progress
it clears the air, despair revives, we care about each others' lives
it's a human culling with heroism, national pride, people uniting
above all, war is exciting

Without conflict, we'd tie up in psychotic knots and jump into the abyss
any creature has to be able to defend itself, war is necessary practice
A. J. P. Taylor talks about the 'Tribal Gods', saying every nationality
possesses a highly emotional, deep-seated tribal mythology

Last monday Don, Dandy and I went, as planned
to visit Jonathan and Sarah, the lovely Lord and Lady Band
showing us snaps of some royal event, Jonathan couldn't resist
turning to me and asking "what do you make of all this Paul, are you a royalist?"
I said "neither royalist nor Great Britishist", "why" he asked, charming but direct
I said "it's nothing personal, all nations are greedy and aggressive I suspect"
he said he thought the Queen a nice old stick and changed the subject
there are some things that just must not be discussed

The feelings of a people are mighty strong
it's beyond good and bad, it's about where we belong
and grips the very people who normally bang on about right and wrong

Whether the Brits are cutting up Africa, forcing opium on the Chinese
mowing down American 'Indians' or Indian Indians as we please
making off with the spoil, or killing Iraqis for oil, sing loud
the Queen is a nice old stick and it makes you proud
it's simply whom you admire and whom you revile
a bubble of ethics floating in an ocean of denial

Professor Stanley Cohen says "blocking out, shutting off, turning a blind eye
not wanting to know, wearing blinkers, seeing what we want to see
are all expressions of denial – governments deny responsibility
for atrocity and plan to achieve 'maximum deniability'"
smile, we're in denial

He asks if we're aware of this moral schism
does it mask a hidden agenda or is it a lullaby that soothes
"an unconscious defence mechanism to protect us from unwelcome truths"

His childhood in apartheid South Africa turns out to have been a rehearsal
for the denial of torture he observes in Israel until he comes to see
that this capacity for mendacity is universal

Cohen notes acidly "the unedifying ways
in which most people comply with authority"
and the ways authorities shield people from reality
he believes that denial is the normal human strategy

Driving north to Denise, a storm takes hold
arriving early I wander round the town
wrapped up warm against the cold
until the show comes down

Looks like students have gathered here to party
from every sovereign state that doth exist
some are scientific, some are arty
but all of them are pissed

Guys holding each other up, eyes dead as dodos, trying in vain
to pick up girls in tiny tops and skirts with crippling stilettos
staggering like tribes of Quasimodos through the rain
oh to be young again

Denise emerges just as youth has lost its charms
we drive out to the caravan park, past dark silent farms
to the bed in the heated awning and into each others arms

I awake in a blaze of sunlight to a startling sight beyond
of quiet, middleaged men fishing around a picturesque pond
the most peaceful scene there is, where loving wives make sandwiches
a peaceful world of caravans, off the beaten track, alone with ducks that quack
and fish whose peaceful lives consist of being caught, unhooked and then thrown back

We wander through the winter's day
take sunday lunch beside a delightful motorway
wander through fields and woods until our time has almost gone
there's not a leaf in sight, yet it's blissfully warm and bright
if this is global warming, bring it on

We chat about Vienna where the family will spend
a holiday together, Denise will fly out for the weekend
so now the dates are sorted, an itinerary's being planned
and there's a chance Richard's eldest son, Eliot, now 31
may fly over from New Zealand

I'm thinking about Eliot, when Denise says we're lost and it's late
we finally get back by skirting a huge rusted industrial estate
goldfinches zipping about, dancing in the last light of day
we hold each other tight, say an emotional goodbye
and I'm off down the motorway

In my life, I've been told Germans or Russians or Muslims are inherently evil communities
in an Egyptian travel agency I was advised not to go to Israel because it's full of monkeys
(I said I was Jewish and their faces turned bluish) that animals are inferior
that white men are the crowning glory of creation, oh jubilation
okay, I get it, people want to feel superior and yet why
does my superiority imply that all of you must die

Some academics state that we are programmed to be evil
as a result of natural selection: we have survived because we kill
great, if evil is innate, if we can't modify our will, we can murder to the hilt
if that's the way we're built, no more guilt

I know genetically we've got to eat, got to defeat the enemy
that doesn't mean we're primed to go round hacking and maiming wantonly
we also innately possess the facility to differentiate, develop and increase our flexibility

In the famous Milgram study, believing it was real
65% were willing to give even lethal electric shocks, and the shocking news
seemed to seal our fate, humans simply follow orders, do not think and choose
it's a basic human trait and there is nothing to save us from our mindless insecurity
but Steven Baum points out that 35% refuse and he believes the key is emotional maturity

Looking at photos of atrocities, he notices eyes
victims' eyes are sad and scared, carers' eyes alert and kind
while onlookers seem vacant, blind, don't even seem to realise
and then there are the perpetrators' "mocking, gleeful eyes"

From the Nanking Massacre, where Japanese
compete to kill, torture and rape the most Chinese
to gleeful US soldiers torturing Abu Ghriab prisoners
Baum notes the joy of atrocity, quotes a Hutu boy who says
while "some offenders claim that we were blinded by ferocity
that is a trick, outside the marshes our lives seemed quite ordinary
we spoke mockingly of cut girls, swapped gossip" at the cabaret in town
and "made fun of every 'mercy!' cried by someone who'd been hunted down"

A school play in Texas 'backfired' when students fixed their fascinations
on the "jack boots, flags and thunderous Sieg Heil demonstrations"
drunk on "the display of unlimited power and cruelty"
"strutting and heel-clicking" round the joint
Baum says they're too young
and that's the point

Adorno describes the aggressive personality
as subservient to authority, adhering rigidly to its morality
punishing any violation, preoccupied with power and domination
'I Will!' – like a helpless child, whose will is unsullied by any other consideration
and it strikes me that 'I Will' is handed on a plate to every nation and corporation
they want what they want, never mind the environmental or human degradation

Unlike kids, these 'I Will' entities don't grow up
they'll wipe out any opposition that might show up
which could be dangerous with our capacity for global blow-up
and because we're sitting ducks in the cities where most of us now live
and because damage is cumulative

Warriors may die on a battlefield but the effects of war do not
they pass down through the generations, poisoning the pot

Rainer Höss, grandson of the Commander of Auschwitz
travels to the scene of the crime as if drawn to the abyss
young and old gathered, each with reasons for their visits
are shocked and enraged when Rainer Höss says who he is

The mood in the room changes, there's anger, danger, fear
a young woman tries to speak through her weeping rage
until eventually she says, my family were all killed here
and violence fills the air as if there's still a war to wage

An ancient man steps forward, as if ready to renew it
a survivor of the death camp, his move raises alarms
you were not there, the old man says, you didn't do it
he embraces him and Rainer Höss collapses in his arms

Online, a young US veteran
who doesn't give his name
says "I tried hard to be part of my service
but all I could feel was shame
the racism could no longer mask
the reality of the occupation
these were people, these were human beings"
he describes his growing realisation
and that since, he has been "plagued by guilt
everytime I see a mother with her children
like the one who cried hysterically
that we were worse than Saddam"

He describes young girls, old men
dragged and beaten, adding guiltily
“we were told we were fighting terrorists
the real terrorist was me”

“Racism within the military
has long been used to justify the killing
subjugation and torture of another people”
he points to government as intentionally instilling
hatred, describing racism as “a vital weapon”
since “there will only be a war
if soldiers are willing”

“Soldiers, sailors, marines, airmen
the vast majority of people living in the US
have nothing to gain from this occupation”
nothing, he says, except their distress
“we lose limbs, endure trauma and give our lives
our families have to watch flag-draped coffins
lowered into the earth” while “millions
in this country without healthcare
jobs, education” or the means to pay
must “watch this country squander
over 450 million dollars a day”

“Our real enemies are not in some distant land
they’re not people and cultures we don’t understand”
but “people we know very well” who wage “war when it’s profitable”

We’ve come a long way from stones and fire and now we’re faced
with our own institutionalised murder and laying the planet to waste
with more of us and less resources, it’s to our advantage to change courses
so what’s the cure – we can recharter our nations and corporations globally
but it will only endure with a real change of heart, Baum’s ‘emotional maturity’
can we mature – yes, from life in the trees, it’s what we do, we problem-solve
we’ve done it a zillion times before, we learn, adapt and evolve

But what shocks me is that I’ve been studying systems from the start
systems-thinking through the cosmos, biology, organisational systems of humanity
only to realise that it comes down to individual maturity and a personal ‘change of heart’
systems don’t reform systems, systems are impersonal, they have no heart, don’t care one bit
so this is where me and systems part – they do not experience life, so they don’t value it

7 The Translator

“I bring the stories to you
because I know most people want others to
have good lives and when they understand the situation, they will do
what they can to steer the world back toward kindness” – this is Daoud Hari’s view
despite all that has happened, he puts his faith in the kindness of people
for “this is when human beings I believe are most admirable”

“When I was thirteen, the world lit up around me
and I first saw men flying in pieces above me
I was finishing my afternoon chores when twenty
government troop-trucks suddenly
surrounded the village” the commander then
“organised the beating of some quite old men”
and travelling on, took “the three of us children
we knew village defenders were in the wadi waiting to attack”
but soon the trucks were speeding out along the track
“suddenly there were loud explosions all around
the commander used us as shields as he ran”
the children put their faces to the ground
hearing the RPG rounds thud
sending stragglers “into the sky
with trails of smoke and red mists of blood”

“Soon after, my father sent me to school” but life in El Fasher was so frantic
that with “too many people, too many cars, too many new things, I got sick
my brother Ahmed stayed until I got better, he showed me good things
I got a job cleaning tables at a restaurant” in the evenings
“at the restaurant I began to learn about politics
this fighting sounded like a good idea to me
I dropped out of high school and hid for 2 weeks
planning with friends to go to Chad and join up with Déby
Ahmed came and found me, he sat me down under a tree
and told me” to “use my brain, not a gun” that this was a better plan
that it’s “doing the right thing for who you are” that “makes you a man”

“My father wanted me to accept an arranged marriage” but Daoud wants
“to see something of the world first” so, having finished his study
“from Libya to Egypt, I worked in restaurants along the Red Sea
then I heard that the wages were even better in Israel”
and that is where they captured me

“I was sent back to Egypt, harshly imprisoned, begging, beaten
my friends in Cairo contacted Zaghawa tribal leaders” who then
“contacted Human Rights Watch” and also the UN, so “I would stay
in the horrible prison for a few more months but then I was allowed to fly away

“Darfur was burning”
you can imagine if this land were yours
“seeing your homeland below in points of fire
whatever warrior blood comes to you from your ancestors
would be working inside you” yet he realises, even as this rage starts
that he has friends of many races “and this makes a difference in our hearts”
also, seeing the world from above, as “travellers in space” do
“bends one toward a peaceful view” and after his release
he just wants peace

“At the airport, news of the war surrounded me
of sisters missing, mothers killed or raped, deaths in the family”
then “after several days to recover my health, it was time to go to Darfur
I found a good land cruiser” and “packed shoulder to shoulder” had to endure
the sight of “burned villages” the tide of people escaping until “it did seem
in the trance and bounce of the long journey, like a bad dream
our world falling deeper into the fires of cruelty”

At his elder sister’s village, Daoud continues this experience of hell
of poison bombs, the boys’ bodies “burned by some chemical, the smell
still heavy, everyone vomiting, fifty camels, other animals dead at the well
all the bright colour was now gone, except a sad sprinkling of dead songbirds
every cousin told of ten or more deaths in his part of the family” and their words
confirmed the intent of the government, with so many bombs landing
“in every adult eye was the dullness of a fatal understanding”

“It was not the homecoming I had longed for
mother looked very old, she saw me and wept into her hands
we had lost twenty cousins, each like a son or daughter to her
too much death in the land of no doctors, Ahmed looked older
he now took care of several entire families whose men had died
I had been feeling like a visitor but Ahmed’s arm on my shoulder
was the gentleness of home” Ahmed takes Daoud by the hand
to their father “in his eighties, unusually old for this land
with the help of his herding stick” he can stand
and as father and son come face to face
he “opened his arms and gave me a long embrace”

“Over dinner, Ahmed reminded me of all the paths
of all the water points in all the remote places” so I would know
saying “it will not be easy for all these people to get quickly away
men like you could help them – he was not inviting me to go
but he was clearly not inviting me to stay and die”
and “I was happy to find my place again
in my big and loving family
maybe Heaven is like this, a warm reunion
of those you love, after dark times and a long separation”

“About 9am, a strange sound, thumping like a great drum
I saw two large green helicopters, I saw Ahmed run
from his enclosure with his gun, let’s go! let’s go!” he said
“women screaming to their children, let’s go let’s go” they said
and everything in the village began to move in a swirl of dust
little songbirds hid in the folds of my robes” then fell dead
RPG rounds setting huts on fire, in the trees bullets cracking
I am dead, I am dead, this is how I died, it is not so bad, I was thinking
the camouflage-painted Land Cruisers” were now attacking
“large caliber machine guns firing” while “the pushing of the people
into the mountains” continued until daylight was almost gone
“you have to keep going, up steep places and on...”

“Surviving village defenders caught up with us toward dark
my brother Juma looked at me sadly ‘our brother Ahmed is killed’
we heard distant bombing “other villages dying” more blood spilled
“fifteen of us decided to ride camels back to the village to bury the dead
it was mostly gone, I found Ahmed, I dug a grave ‘goodbye Ahmed’
it was raining a little ‘this has been a good village’ I said”

“Our village, now a moving line” in the sand
joined here and there by people of other villages
until we were a great mass of people moving across the land
each day “we would have to bury several wounded” we usually had warning
“you can usually see in a man’s eye, if he will be blessed to die before morning
on the fifth day we came to a remote and grassy valley” where some chose
to hide with their animals and “my mother and sister were among those
my father would keep moving” with the others, one of many waves
of refugees “walking to Chad, marking their way with graves”

“Six of my old friends and I began to scout ahead, we brought food from Chad
to people who had run out of everything” and though all the news was bad
“the best way to bury your pain is to help others and to lose yourself in that”

“We came upon a lone tree
where a woman and two of her three children were dead
the third child died in our arms” Daoud notices how fast a body decays
“the skin of these little children was like delicate brown paper, so wrinkled
you would think it takes a long time, but it takes only a few days
the woman hanged herself from her shawl
we took her down” and buried them all where they lay
“this moment stays with me every day”

“After these months we began to see the aid groups that respond to crises
these groups had saved my life in Egypt, we could help them” but Daoud sees
his friends have other duties ‘you go ahead’ they said, for they had “decided to
sell their camels for guns and defend their villages – it was not for me to argue
my six friends and I embraced one another” and hoping we would all be blessed
as the sun rose “in a very red sky, they rode east to El Fasher and I rode west”

“The fact that I spoke Zaghawa, Arabic and English
made me useful to the aid people” which led to them referring
Daoud to a ‘Doctor John’ who’d “arrived with the United Nations”
in order “to make a legal determination if a genocide was occurring”
they’d be interviewing refugees and he asked if I’d translate
“yes, I would do that, I had found my fate”

“The horizon was fluttering with plastic tarps and little rags
our caravan of white vehicles was waved through a checkpoint” Daoud says
“the women of Africa have a genius for colour” and describes them as “the flags
of resilient life” where “hundreds of thousands were dead, millions homeless”

“A man in his late thirties suddenly appeared
he said ‘I took my four-year-old daughter and we ran
the Janjaweed caught me, she watched from some bushes as they beat me
the Janjaweed man, who had tied me to a tree, saw my daughter running to me
let her run into his bayonet, the blade went all the way through, she still cried out to me
then he lifted up his gun, with my daughter on it, with blood from her body
pouring down, he danced around with her in the air” so his friends could see
“my daughter stretched her arms in great pain and looked at me”
his wife came over and sat on the floor, she said “he cannot let go of what he saw”

“When the genocide investigation came to its end
the US and others determined that yes” the world agrees
that “the government of Sudan was conducting a genocide
and I got a call from a group of journalists, fearless for their stories”

“My cell phone began to fill with sheikhs, drivers, military men and even rebel commanders” anyone anywhere who had got the power to help a journalist get into Darfur and out again “they just wanted to write stories that would help, also they drank a lot reporters are so very human and sometimes they weep a French reporter was so moved she could not eat or drink or speak some had to return to Chad to recover from what they saw Chad has oil wells, so there are grand hotels for the rich who come to quickly take the money before it ruins the charm of our cities of mud and straw”

“I had to be careful if I wanted to get my reporters out of Darfur alive so more stories could go out to the world” this was now Daoud’s way to survive since his own village died “that had become my reason and really my only reason for living I was feeling mostly dead inside and wanted to make my remaining days count for something”

We’d come upon “rebel troops in dirty jeans, ammunition belts hung across their chests loosely-wrapped turbans caked with the dust of many days’ fighting” a war they did not begin “emotionally they are walking dead men who count their future in hours – you can imagine how you would feel if your hometown were wiped away” your former life would cease “your family killed by an enemy you now roam the land to find and kill, so you can die in peace”

“Among the rebels, the Sudan Liberation Movement, the Sudan Liberation Army the Justice and Equality Movement” and several other rebel groups as well as these “there are other groups in Chad and they travel across the borders as they please also, it must be understood, that Sudan is aligned with radical Islamic groups” and, separately “is letting China get most of its oil, so some surrounding countries and some Western interests” are thought to be supporting rebel troupes

“It is sad when these chess games are played” how life gets tougher with “nearly half of Africa covered by pastoral lands, how ordinary people suffer” how “much of this land has great wealth below and poor people above” who barely survive and how “you have to be stronger than your fears, if you want to get anything done in this life”

With rebel groups it is often difficult to say “who is on which side on any given day” since “the Arab government of Sudan makes false promises to one rebel group and then another” as part of the plan to keep non-Arabs fighting each other and this evil “is done so the genocide can carry on and the land be cleared of the indigenous people”

“A thin man, about forty-three, Paul Salopek had only a few days to visit the refugee camp for National Geographic a Chadian named Ali had a new Toyota Hilux” but, with two children, was in doubt until friends turned him about and it was these three, Paul, Daoud and Ali, who set out

“When we reached the wadi, Ali took us expertly into the deep water and up the other side we were in Darfur, an hour went by, a young soldier stood in the road with his Kalashnikov” they decided to “put us back in our vehicle with a new driver” and after several hours ride Daoud and Ali were pushed into another truck (“Paul was somewhere else”) and driven off into the remote mountains where they “beat us with fists, boots, butts of guns, I felt some bones breaking in my fingers”, then “we were waiting for the ‘crazy commander’ to come”

The crazy commander was clear as to the course he would choose
he said ‘I want to torture you two now and you will tell me everything’
“torture was popular, because Guantánamo and Abu Ghraib were in the news”
Daoud and Ali were hung upside down from a treetop “your eyes feel like they’ll pop your head throbs, you can’t breathe” then, from time to time they would let us drop
“I told them I was a translator, reporters were not spies” but “after hours you cannot talk the boys led us to a wadi strewn with bones, hair, the stench of death, I tried not to walk on these bones but it was impossible” I said “I know some of you boys, I don’t want to watch you shoot us, so get us blindfolds” they decided “none of us are going to kill you”

“When the commander’s vehicle came speeding back in the mud”
he scolded the boys but the head boy said that they could not spill our blood
“you are like our uncle, you will have to do this” then Daoud hears the commander say
“Daoud, you know if I shoot you, there would be trouble between our families someday so you and Ali need to go back to Chad”, we would be free, it was hard to conceive this
“I was taken back to Ali and told him the good news” he said “and you believe this”
at “a camp about two hours away” Paul appeared “drawn and exhausted
I told him we would soon be safe in Chad, Paul shook his head”

I was interrogated by Sudanese Army Commanders “the kind of men who had killed Ahmed” I would not answer them, I said “I did not want to I am dead, you know and I know, so why should I talk to you”

“A helicopter landed, five fat Sudanese generals got out” so then
“I said quietly to our guards ‘it looks like they eat all their prisoners’
this made them swallow hard as they saluted the big men”

“The largest of them approached me with great anger – you are the problem here you, not us are the war criminal, you bring reporters in to lie about us” it was clear this “anger was so great, his soul knew very well he was wrong, you could see ‘We are going to kill you right now’ one of them said, it is interesting to me that people bother to shout at you when they are planning to kill you others came and beat us, when these first madmen” withdrew
“kicking us, hitting us with their gun butts” and warning us all if we fell, we’d be killed, “after 3 or 4 hours I was first to fall”

“The next morning we were beaten until we collapsed again
they beat us but then gave us a little food on the third day
a large man with a whip asked ‘do you want to talk now?’

I told him everything true that I could think to say
he said I had come into Darfur 6 times, I told him what we saw
where you lined up 81 boys and hacked them to death, so if you’re
not proud of this, you should stop doing it” Daoud replies
“journalists do what they do, all over the world and nobody calls them spies
the guard beat me with a thick stick” but I had nothing more to tell
“this went on a very long time, I was dragged back to the cell”

“I woke up prepared to die each day”, a colonel said to me
‘this guard is going to show you around’ as a sign of ‘hospitality’
“in one room was a large chair with electric wires, in another a chair
with restraints, medical posters on the walls, helpful torture guides to genitals
eyes, muscles and nerves of hands, arms, legs, trays of steel tools were everywhere
the tour was long” and then “I told the long story again” yet, as Daoud thought
“the colonel had no power to torture us, or he would have done so
our case was being transferred to the civilian court”

“Four US soldiers were standing in the back of the court, Paul was very moved
US soldiers may not always be, what you want to see” yet perhaps we could assume
that “with those guys smiling and winking at us, the good America was in the room”

From an interview in the Telegraph newspaper
Daoud Hari, a 35-year-old tribesman from Darfur
with tribal scars like quotation marks on his temples
with long and expressive fingers, his body tall and slender
wearing a tan suit, an open-necked shirt and craving nicotine
is being chauffeured across Manhattan in a glossy black limousine

Fourteen months ago, he was being tortured in a Sudanese prison
now he travels the rich white world and people flock to listen
yesterday was Seattle, today New York, tomorrow he’ll arrive
in Europe for a six-week tour “it is very crazy, but I must do
everything I can to help or what is my life”

“I bring the stories to you
because I know most people want others to
have good lives and when they understand the situation they will do
what they can to steer the world back toward kindness” – this is Daoud Hari’s view
despite all that has happened, he puts his faith in the kindness of people
for “this is when human beings I believe are most admirable”

8 The Greater Good

Is the translator right to appeal
to what our better natures feel
should we be doing what we should
is there a 'greater good'

Moral values, ethics certainly exist as secular laws, philosophical positions
there are rules too numerous to list, religious dictums, cultural traditions
every story has a moral twist but of what do the moral values comprise
do they exist in our hearts, our DNAs and do they exist in the skies
what are they based upon, are they innate or a human add-on
some trumped-up savior to curb our natural beastly behavior

The universe doesn't feel like a place where destruction rules
galaxies don't seem to go round in gangs fighting duels, waging war
planets don't just crash about, knocking other planets out, it's more
like a place of creation and transformation, with each part appearing
to fit with every other entity, coherently cohering and even more odd
whatever destruction occurs, seems in fact to be within the creative act
such as when old stars die and new stars are born, as if there is method
we have only to look to the heavens, to conjure up an awe-inspiring god

Religions and science imagine a source
from which all this diversity appears
religions describe it as a moral force
a Oneness that's Good because it coheres
where 'love' describes this complicity worldwide
and where the one true god or the forces of karma preside

In eastern religion (Hindu Buddhist Taoist) the source, like the sun
is the powerhouse of consciousness, the central force
or spirit of creation, without duality or separation
where, in an ocean of love, all is one

To middle-eastern religion (Islamic Jewish Christian)
the source is god almighty and in science, the 'singularity
of self-organising energy' with its own take on morality
'survival of the fittest', the competitive drive to win
while, in religion, the 'source' or God draws us in
for the greater good of all and to deliver us from sin

Eastern religions and western science describe creation as a dynamic process outward from the source, attended by increasing complexity and separateness where at 'phase transitions' or 'regions of differentiation', the power polarises and as negative and positive forces recombine as atoms, as energy materialises as each force differentiates and reconverges, the space-time world emerges whose over-riding sense is cause and effect, the law of consequence the drama known as karma

I lick the cream, the cream is licked
I kick my kids, my kids are kicked
I should come to my senses
there are consequences

Damage them, damage me
spread joy and joys abound
both outwardly and inwardly
what goes around, comes around

When Adam and Eve have to leave
their paradise at the centre, they enter
this polarised world of wrong and right
where it matters what we do, how we live
and where we move towards the light
religions view this ethical imperative
as the journey to Heaven, sing hosanna
or by progressive reincarnations to Nirvana

The scientific interpretation
of the immortal soul or reincarnation is just
that we are 'star dust' and since matter/energy
can neither be created nor destroyed
all our bits and bobs are eternally employed

For believers in science
reincarnation is a vast recycling machine
where, in myriad forms, we have always been
an integral part of this universe and will always be
it may seem great, however this is endless endeavour
unfortunately, no Heaven or Nirvana is waiting for me
only Universal Entropic Heat-Death, which is a bit gloomy

In the drive to survive, physical health is obviously good to pursue
but in a world of cause and effect, emotional and spiritual health count too

A person with strong positive feelings is much more resilient
on the darker side, I've seen bad feelings turn to malicious intent
till the person's unaware of causing despair or why life for them is tough
I've watched blame compound a crime and forgiveness release back into love

Scott Fitzgerald writes in his notebook "I do not lie to myself", an honest man
personally I can't discriminate, if I lie to somebody, I start believing it, it confuses me
and I don't need untruths sitting there, skewing the picture and thwarting my every plan
anymore than I want my sanity warped by my fears or vanity, as happened in my youth
I'm reliant on my honesty, I need clear open pathways, I need truth
still, there are times when I don't know what to do
and then there's only faith to see me through

In South Africa, where Denise is filming, we drive to a township late one evening
where Ma Anna welcomes us and proudly shows me around her land
next morning I look out of my tent, it isn't earth, it's sand
almost nothing will grow where these people live
and I'm told most of them are HIV positive

At church a band is playing, everyone is singing and dancing
and I instantly believe in God, no one here has anything
except their faith expressed as love, it is inspiring
it trembles through me in all its magnificence
I do look to the light, I do look for guidance

Faith is a remarkable thing, but what is it
I only know it's the difference between a weak and strong spirit
it seems to fill one with courage as fierce as the sun
yet if it is the will of the 'oneness' to act as one
why doesn't it simply, seamlessly run
why is any damage done

It's a dark, stormy winter's day
with everyone away, even Sam
who's got a job, doing removals
with Nice Man Big Van and Denise
has just gone and Dandy's in London
so I'm here alone with the whirling trees
with the rain driving down on my little tin shed
with the quarrels of morals, the dramas of karmas
and the seasoning of Spinoza's reasoning
ringing in my head

Spinoza says “moral values are a human creation
cultivated in an artificial garden” in his day this is a profanity
“we want everything arranged according to the dictates of our reason”
he states, observing self-centred humanity

My values are egocentric and this entails
me caring about Dandy, far less about snails
and almost nothing for some carbon atom in distress
I confess there’s a hierarchy to the things I care about
my empathy, like a proton’s forcefield is less
and less powerful as it spreads out

And my values change at the drop of a hat
I used to think this and now I think that
because what’s good, is what’s good for me
ethics morph eternally, transforming every rule
it’s okay to kill in war but not in your local school
killing whales was okay yesterday but not today
circumstance prevails, as every value rearranges
because what’s to our benefit changes

But if ethics change and they’re an egocentric force
what’s all this bollocks about the ‘source’
this peaceful world we should endorse
we can’t stop change, we must do and die
religions compete, partners row and siblings vie
within every relationship, even within me
there’s this negative and positive electricity
this uneasy tension between conflict and complicity

Titus Lucretius Carus
asks “if atoms never swerve
so as to originate some new movement
what is the source of the free will we observe”
the freedom to pursue something different or new
is required for development but then free will will do
what it damn well pleases, it’s forever taking the piss
and being remiss, so where’s the good in any of this
values that change at an ego’s beck and call
are no values at all

A gale is howling, a phone ringing and I’m thinking to call it quits
what’s this challenging world, where everything fits, yet pits its wits

Values change like the wind, they flicker in the flame
in a world where nothing stays the same, in a day
Don has bought a Jaguar and a mobility scooter
they're parked beside each other in his driveway
he's having gates and raised planters to garden
he's moving on

Everything changes, spins on a dime
that's why values change all the time
no sooner here than gone
it's a journey we're on

No one wants Groundhog Day
we live our lives in forward motion
our egocentric beams lighting the way
it's a journey we're on

Life isn't static, time isn't frozen
nor on automatic, nature is emphatic
proactive in pursuit of evolution
it's a journey we're on

Our self-centred view says our lives are tough, we must be strong
but everything else is just mindlessly tootling along, an illusion
distance smoothes things out, identity is in the detail
the reality at every scale is a profusion of entities
everything everywhere is working hard and fast
like Disney critters beaver away at creation
informed but not governed by the past
it's a journey we're on

The universe isn't just sitting about having fun
there are dangers to face, rewards to be won
things jostle for place and damage is done
both damage and reward, one suspects
are side effects for evolution's sake
while the unknown future keeps us awake

Of course there is coherence
though not in any passive sense
but in the restless need to experience
it's more than karma, more than cause and effect
it's a journey into the unknown, a leap of faith I suspect

All the big problems we face currently
are products of our own success
war, genocide, pollution, poverty
and while it's a mess we've to address
in the passionate books describing these tragedies
authors suggest logical remedies as if by some trick
we can remove the conflict side of the dynamic
till the world is a picture of peace

An early photographer is taking a portrait
a group of happy smiling folk await his call
until, eventually he says, 'everybody smile'
now they must endure the lengthy exposure
and hold their expressions for an eternity while
their eyes want to blink, their faces want to fall
their throats want a drink, yet after these trials
the result is a portrait of frozen smiles
and a frozen smile is no smile at all
the strain of complicity shows on their faces
our enemy isn't just excess conflict
but equally excess stasis

There may be a 'oneness'
and the oneness may be good
and everyone may agree that we should
learn to live together in harmony
but peace breeds entropy

Stalin, like many autocrats
becomes paranoid and increasingly despotic
the more impregnable, the more enemies he splats
the safer he becomes, the more neurotic

Like Stalin or Western consumer society
the safer you are, the more helpless you may seem to be
Carver Mead describes the flow of energy as 'in-phase', while
in matter, all the forces neutralise each other, they reconcile
such are the charms of peace, locked into gear eternally
in a loop going loopy, everybody smile

Kurt Vonnegut reads Donna's book and she glows
his letter is nice and his basic advice
'punish your heroes'

We thrive on problems and solutions, it's what we do
life, like breathing, is controlled combustion
out with the old, in with the new
where needs become locked
where energies are blocked
they build up and burst through
until, in a moment, it all rearranges
reality changes and so do our points of view

And goodness swerves
to follow the moment, which it always serves
the reality of the moment is our reason and rhyme
goodness isn't one thing but the right thing at the right time
what's good may change but it always serves, while bad obstructs
as experience conducts and where karma works, in whatever situation
on a journey of exploration

Our evolution
is the measure of our awareness and intent
where the test is in the moment
where we've each to choose or invent
whatever we think best

A new solution
doesn't usually just click into place
it's a struggle, no gain without pain
as Prigogine says "we grow in direct proportion
to the amount of chaos we can sustain"

This need to evolve
Pirsig describes as a force
which seeks endlessly to explore
"to buck any closed system" to experience more and thus pull
"the pattern of life forward, to greater levels of versatility and freedom"
so "at every level, even the subatomic" the experience is imperative
every moment we live is urgent and intense, it is not a rehearsal
it matters, and this very human sense, seems to be universal

While damage obstructs, conflict may free
may untangle, resensitize, fire the imagination
there is a greater good but it isn't peaceful unity
it's the task of creation

9 African Bar Girl

In the 1970s John Chernoff tapes a series
of interviews with a woman he calls 'Hawa'
Hawa speaks English, French, German, Lebanese
Ashanti, Ewe, Hausa, Dioula, Mossi, Dagbamba and Ga

He begins 'Hustling Is Not Stealing' with a line by Salman Rushtie
"to understand just one life, you have to swallow the world"
he sets the scene as this 'tiny woman' sits to tell her story
her hair 'braided with coloured beads and cowrie shells'
her round face, her almond eyes, 'her smile is pretty'
her copper colouring, her voice 'light and tinkling'
and then we hear this young woman talking

"You know, I'm not bad as such
but when I was little, I thought my way was very bad"
Hawa was born in Ghana, where "my mother died when I was three
so I had to be handed there, there and there and no one could hold me"
though always in touch and sometimes with her cocoa-labouring dad
"I could not live in one place for one month, they said I was very bad
but I didn't know why I was bad, I asked many questions and when
they said 'we don't do this' I wanted to do it and see what would happen"

With an uncle whose "wife had no baby and liked to beat me" Hawa says
while being beaten "God knows, that's why you don't have babies – yes!"
so she must leave "I had to stand on the car road in the village"
it's midnight, the aunt shouting, Hawa crying as she's told
"my mother died and left me because I am a witch
I killed my mother, ha! I was about nine years old

Another aunt said 'it's because of your mouth that you can't get any place to live'
then I said 'yeah, but I'm living in the world, no? if I talk bad then God should
take me away – I think I am good, that's why I'm living in the world'
I think I am good'

This woman put pepper in my eyes
the third time she said I shouldn't go to the toilet
and I wanted to shit because this pepper was in my eyes
I was twelve, I just went to the middle of the room like that, and then I shit
then it was smelling, so I started to walk" because "maybe this woman would make me eat it

My aunt in Abidjan was married to one French man
and when she came, she got a Lebanese man
and when she came, oh-h-h, she liked me
and I liked the way she was, she didn't tell me
do that, do this, no, every time she would give me
even my clothes, I didn't wash them and I was free
this was my la-ast place where I stayed and grew up

“When I was fifteen they started ‘hey, we have to watch her well’ and my auntie called me and said ‘your father told me if you need something, you should ask me I will give you money, you shouldn't go and be taking money from somebody there are some girls, some boys like them and because of money they go with them’ then I said ‘a boy can like me with money?’

Hawa returns to her dad, since she is to marry
at a cinema, an Indian man “would buy me gum and candy”
giving her a lift “the third day he mixed whiskey in the Coca-Cola
I got dru-unnk! and this man did something with me and then
I was feeling pains and he said ‘tell your father that when
you passed menstruation, you had waist pains’ – so
my father didn't know and from that time, I was afraid of men

They brought a man and this man had two other wives – I had thought that if you marry you are free – I didn't know that in the Muslim way, if you marry somebody who has a wife you are a slave – yeah! it's true, because – everything! you are the young one, you have to then one day the first wife brought her things – I said ‘I'm not to do this fucking work for you’ then she said ‘oh-kay! we are going to see who is going to live with this man, we will see’ I said ‘we married the same man, no? the way he fucks you, it's the same way he fucks me’

So I took a small bag and went to my father's house and when
my father said ‘no, it's not possible’ – I said ‘I cannot go there again’
my father said ‘then you can find where to live’ - then I said ‘it's finished
you looked after me, you tried, I thank you very much, because you took me
when I was three, you suffered with me and now I have grown up, I can feed myself, I
can look after myself, so this is it, bye-bye’

I went to my aunt, she said ‘I am afraid of your father, your father will say
it is because I have no husband that's why I just follow Europeans
look, I'll give you money, I will show you the way
travel to where you want, you can go to Accra or out of Ghana’
so, this was my life when I woke up, when I started my life – I said ‘okay’
my auntie gave me two hundred cedis, two hundred cedis! then I took my way – Accra!

So when I reached Accra, I asked a taxi driver ‘do you know a cheap hotel?’
he said ‘oh, Paradise Hotel, many girls from Kumasi are living there’
and I knew one girl, Ramatu would say ‘let’s go to Labadi Beach
put on some jeans or hotpants’ – so Ramatu showed me The Life, yeah
I knew something about men but it was in Accra that I came to know more
getting money every night, every day buying clothes from UTC or Kingsway store

One night an old Holland man, Henrik said ‘don’t sit at table with these Japanese
if a good European man sees, he will be afraid of you, if you like, you can
come and live with me’ and I saw that he was a very nice white man

One day they arrested all the girls, they brought me
to Community One Police Station and this Henrik came
with two other guys, they said they were coming to see Mary
yeah, Mary, moving with Europeans, I also had a European name

Then this one policeman said ‘so all these three, tough, tall men
came, so all of them fuck you?’ I said ‘they are my husband’s friends’ then
they said ‘we Africans don’t allow our wives out alone’ so Henrik said ‘yes I see
but I am not African, the way I keep her well is to leave her free to be free
then she’ll be happy to live with me’

This Holland man, I stayed with him three months – you know, it was something funny
every night I used to dream all his body was a snake, coming up under to push me
to fall down the hole, I dreamed of this for about two months then I said ‘no’
I was afraid to live with him, hey the world is hard, but I must go

If I would smoke groove, I used to think ‘eh-h, so: so the world be?’
if somebody told me, I wouldn’t believe it, coming from Kumasi
I was thinking ‘whether it’s life or death, you must go and see’
but I just stayed okay and by then I thought ‘I’m free’

You know, we used to see some bad things too
will a bad man tell you that he’s bad? he will hide
they have a smiling face and they don’t smile inside
if you do that kind of way to me, I have to treat you badly too
you must pay me the money, it’s not because I love you that I follow you
I will just break some machine, this is not a human being, I am a human being
sometimes, they used to beat me, hee-hee! yes, sometimes they used to beat me
some nightclub, you will see the girl dancing, she’s happy but that very night maybe
she will go with somebody and suffer, we take our life like that in this ashawo business
you know, there is not any girl who will wake up as a young girl and say
‘when I grow up I want to go with everybody’, not any girl will think of this

I was at Accra and I got a man, Nigel Manners, heh-heh-heh
he had a big voice, like a soldier ‘hey? hey? my dear, come here!’
I thought he would give me something – it was all coins, eh?
I threw it in his face, then he said ‘oh Mary, here is not Tamale
I am a teacher in the Training College’ and when he went to Tamale
he was sending with this money, a gold chain with a Lebanese cross
with my name and God will bless me on the road to come to him in Tamale
you know, he was with big knickers, like a skirt and his stomach was big
‘oh Mary, how was your journey?’

He had already told this woman to leave the house
this woman wasn’t happy so he said we would all live together
every night we would go to the Gymkhana Club and then
every time he wanted to be big, he would call the barman
‘hey Yakubu, come and see! you think I’m a fucking man?
you think fucking Nigel Manners is a rich man?
eh? bagabaga-naa! I have two wives!
look at my small wife! look at the big one!’

Nigel would put all his money in this dresser
so this woman took the money, I said ‘you shame me’
Nigel said ‘pull off your dress or I will shoot you’ – she took 150 cedis
then Nigel said ‘take it and go out, I had pity for you because you see
that Nigel Manners is a fucking drunkard, he hasn’t got any experience
so every time you have to steal from me’

So that’s the way I met Nigel, to come and stay with him
I stayed with him for a long time, about a year and some months
I thought ‘he’s a nice man, he’s free, he’s a free man to live with’
and he was helping me, he opened a bank account, 2000 cedis for me
he gave me a job, I was supplying bread and meat pies to the school in Tamale
that time with Nigel, I was starting to see my family” and sending my father money
“I had one sister and one brother with me at the College, Nigel paid the fee
I told you Nigel built me a house, no? yeah, for my father at Kumasi
Nigel also gave me his car, his own car, when he was going
I didn’t drive, my father too didn’t drive, so we painted it ‘Taxi’

And what let me leave Nigel, was that Nigel went to London and he didn’t come back
he was telling me ‘try to have your passport and come’ and you know, he was funny, he said
‘you must buy me some King-Size and whiskey from the plane but I am taking a rest in hospital’
and he died in the hospital, I had a letter from his friend ‘ah, Mary, Nigel is dead’

And since then, I haven't lived with any man who did what Nigel did for me
I've met many people, but I haven't met somebody like him, he – anyway, he was very funny
yeah, if you haven't got a heart, you cannot live with him, if he is drunk, then what he will say
is bad talks but I didn't care about all this, when he tells me something I don't like I will just say
'fuck off!' and he would say 'eh? my dear, you are telling your Nigel Manners to fuck off? eh?
in London, ladies don't say that to the husbands' ha-ha! yeah, then I would say
'yes, here is not in London, here is Africa, I can tell you to fuck off' ha-ha!
and then he would start singing 'fine, fine woman
fine, fine woman-o; you no savvy nothing
I will send you back to your fafa'
ha! He was very funny, eh?
ah-h, Nigel was funny

Many girls in Africa here follow men for money
all my life for some years, I've been going around like this, I have no property
before I used to think, if you find a man you like and you want to stay with him
but now, at this time, I don't have that idea, hey, African marriage is prison
I am thinking, if I have enough money, I would like to have a small house
a portable house, for me alone and then, if I'm
coming or going, there is nothing to worry
I will be living, resting, thinking, having
better things to do at that time

I have only had one Ghanaian boyfriend, for 7 months I was with Eddie" but Hawa can't commit
"he had two children with different mothers – and how these women were, I didn't feel it
I came and stayed at my place, then Eddie was crying, it was coming to end
he went his way, since that time, I didn't have another boyfriend

Now, I don't want to be in one place, I want to be travelling
and then maybe I will be liking the place and so, one funny thing
if it's nice, if I enjoy for two or three days, then I will leave the place
ha-ha! when I want something, I will do it same day, I don't think two days
I don't think to marry, money to do something better, is all I'm struggling for
if you're travelling, you spend, money is going to finish, so you must find more

In Togo with Jacqueline, I came to have a ba-a-d sickness, apart from fever
this menstruation lasted three months and every time I went to the hospital
and they gave me an injection, I would bleed more, I thought that all
my blood would finish, there wasn't any blessed day when I didn't see
blood and Jacqueline went back to Ghana, yeah, when I was sick, she left me
then I was alone and, you know, when I finished my sickness, I had this experience
I shouldn't be living like how I have been hanging, I had some different sense
I thought to get a friend is better

Then I got one man at Royal Hotel, a Biafran
he had a big transport company in Lagos, I was very happy with this man
because he never asked me for sexing and he was giving me a lot of money
okay? – but I could cook for this man and he wouldn't eat, he would take
one spoonful, one and two and then he just wanted beer or whiskey

Then he said 'I want to show you something, my dear, come here, come'
he had a very heavy prick, it didn't get up, it was like catching hold of my arm
he got drunk, he would fall down, he could break the table" so Hawa devises a plan
"draw the table back, then – pom! – he would fall back on the bed ...so I knew this man
maybe six months, he used to smell of drinks, I don't know if this man could sex a woman

Then I got a man from Austria, so I cooked a stew for this Biafran man
it was his last show, he gave me forty thousand and I went with my Austrian

I stayed with Django at a village, Tsukudu, where they
were cutting trees, his wife would be going in three days
the daughter would go next week and then he says
we should go to Tsukudu, I didn't know it was far away
it's a hundred and something kilometers from Lomé

That place was very quiet, one small bar, a dirty place, nothing, no chair
after that, too, we were only two African girls, all the rest, they were there
with their wives, some with children, these white women used to say to me
'do you know this man has a wife?' so everybody hated my man in the place
the place was just a fucking place, ha-ha! you know you can't be happy

Maybe there is not anybody who will say
that this way is good but if you don't know any way
which is good for you, you will do it, you will have to force to do it

Then there was one stupid old man, he was Swiss
he couldn't make love, his thing didn't work, you know, so this
Louki would fill up his car with these small, small, small, small girls
he would give them Coca-Cola and put some small spirits in and then
when they got drunk, he would tell them 'you have to finger your friend'
then he's holding your breasts, then the other one, putting her hands in this thing
then he will take pictures and give them to the man I was with, Django, for developing
so, one day, when these two Hausa girls went home, next morning they were thinking
'I think we did something bad, it seems like a dream but not a dream, didn't you see
that Louki took us plenty of photos' so there was one girl called Ladi
she said 'ah, they made the cinema', then they arrested Louki

And then, evening time, these people rushed on our place, searching they took the camera and all the things, then they arrested us three girls who were living with them, we had to go to the Gendarmerie

Everybody had to stand
one man brought out all the photos, five hundred or one thousand
he asked these white people ‘for what are you people doing all this, eh?’
they are guilty, they have nothing to say, my man poisoned himself that day
it was pitiful, he took something, they put him on the plane to his country
then in the plane he fell down and they took his body to the cemetery

And the police still kept us girls, they took us to Eyadema’s place, where
he said ‘put all these girls on the road of Dapongo and throw them there
because there are many lions to eat these girls’ so they took us to Kpalimé
and although ‘you don’t have pictures, but are following Europeans
you are also the same people’ so we must all stay

We stayed seven months in that house, yeah!
food and drink, all, we had everything, we could go anywhere
look at the foolishness! why? we didn’t know!! every day
you can buy what you want, we didn’t understand, so
we didn’t feel like going away

It was the day before they left us, before we said
‘ah, we were fools, look the time you go to the market
you can go to Lomé or another place, you can take a taxi
but because we had groove and drink, and we ate plenty
we forgot to go home! hee!

Yeah, when I came back to Lomé, I was fine, red and fat
you know it would be good not bad, if prison was like that
the Chef-Cir was giving us advice to ‘find a husband to marry
we are just punishing you people to stop following the European’
after they left, I was at Lomé for about three months, then I got a man”

Hawa’s story goes on and there’s a second book, ‘Exchange Is Not Robbery’
Chernoff says that he knows what happened to Hawa eventually
but there’s “no need to say it” although he says cryptically
that “hindsight may make this book more of a eulogy”
so, while saying “choose the ending you like” we do know really
he waited twenty-four years, from 1979 to 2003 to publish her story
but won’t tip it into tragedy, leaving it the “celebration” he wants it to be
he obviously admires her, perhaps for her own kind of morality, or her energy

10 The Music of Life

“So poor old Ben has gone on with the other good men” is the first line of an obituary I find in Horse & Hound and which I make into a song, some time around 1973 and which I sing when I run away to join a rock and roll band in Birmingham where the lead singer is Joy and the bass player, my good friend is Ben some years later in the 80s, Ben and Joy visit, to tell me they are now an item ‘I thought you’d be pleased’ says Ben, knowing how much I like both of them move on 25 years or so and the band’s still gigging, Denise and I visit, sit in the front row and at the end, sit and chat and so we’re back in touch, that was about 4 years ago and I’ve just found out that a few days ago, Ben was with the dog out the back and Joy was fixing a meal and when she went outside Ben had had a heart attack so poor old Ben has gone on with the other good men

I’ve to delve into the nature of energy once again
this time to get a sense of the nature of experience

First, no other word describes the world in motion
force, pep, power, zip and zest are a piss in the ocean
second, energy is still often described as matter’s property
theories tie themselves in knots in vain attempts at proving it
despite our understanding that matter is made of and by energy
and if anything is moving, it is energy that’s moving it
in fact a definition of ‘life’ including biology, may be
that which organises or is organised by free energy

Yet the old ‘false idols’ problem persists perennially, it’s the bane of philosophy essentially, how to give wings to those who see only things, Heraclitus, in 500 BC says “don’t be deceived! it is the fault of your limited outlook if you see firm land anywhere in the ocean of becoming and passing” urging us to understand if we can that “the very river in which you bathe a second time is no longer the same river you entered before and you are no longer the same man”

This insight is considered so vital that Islam prohibits literal representation as with usury, worshipping things obscures creation, it divides us, our powers decline (and perhaps the nearest expression of the energy world is communicated by Islamic design) now as then, thinkers and scientists do their damndest to set us right, like Schrödinger insisting that “particles are just appearances” so why are we resisting, what’s this energy-matter schism well, just as there is no other word for energy, there is no other word for materialism whether that’s the search for fundamental particles or consumer desire for more shiny articles as Bohm says “the notion that all these fragments are separately existent is evidently an illusion and this illusion cannot do other than lead to endless conflict and confusion”

“This way of life has brought about pollution
destruction of the balance of nature, over-population
world-wide economic and political disorder and the creation
of an overall environment that is neither physically nor mentally
healthy for most of the people who live in it” it's counter-productive
that's the 'false idol' problem 2012 and its effect is highly destructive

Tinkering away at social, political and economic structures does not solve it
the ancient Mystery Schools draw students to the centre, to their potential, to evolve it
deprivation's experiential, revealing what's essential, Pythagoras for one thanked 'em
and I think we've reached the point where we all need to enter that inner sanctum

See mass, charge, spin, magnetic moment, chemistry as evolutionary, self-organising electricity
biology as an earth system, Lovelock's Gaia and Margulis' understanding of nature's complicity
where we each consist of millions of organisms, each a maze of electro-chemical circuitry
woven and used by energy, all creating and evolving in synchronicity

In Energy Medicine, James Oschman says “in a few decades, scientists went from a conviction”
that auras were a fiction “to a certainty that such fields exist and are important medically”
he charts the rise of X-rays, defibrillators, MRIs, nerve stimulators, magnetic field therapy
describing electromagnetic forces at work in the body, where “the whole of the circulatory
system pulses with electricity” with each heartbeat, while “amplification” makes effects bigger
so “a single hormone molecule, a neurotransmitter or a photon can trigger a cellular response
so hundreds of calcium ions flood in to repair” and the cell gets what it wants, all the way
from surface to cytoplasm, on to nucleus and genes with effects on DNA, every detail
connecting, renewing, developing, reviewing, a world not of being but of doing
till we can't fail to see the sensitivity, the intelligence innate at every scale

Oschman observes this electromagnetic sensitivity between bodies, where Reiki healing energy
“seems to contain a higher intelligence, to place hands in right locations” he calls this facility
“the innate intuitive we all possess and can access when we relax our mental processes
each second our consciousness reveals to us a tiny fraction of the eleven million
bits of information our senses pass to our brains, most below our awareness
and we are accessing far more” when we “leave thought processes behind”
hands move “as if drawn by a magnet” as part of this energetic mind
where the physical is virtual, a property of mutation
intuiting pathways of exploration

While neurologist Oliver Sacks, observes in Musicophilia
or rather his mentally damaged, yet astonishing patients reveal
a Hollywood world, all-singing all-dancing, unfamiliar yet so obviously real
which, preconsciously, delivers our waking dream, our reality, which it seems to drive
and where music, an energy form, is not just the food of love but the rhythm and melody of life

Dr Rangell has musical hallucinations, he says “they are structurally like a dream are cognitive as well, have a substructure” and as a psychoanalyst, pursues his theme knowing that “behind every defense is a wish, the songs that come to the surface carry hopes, romantic, sexual, moral, aggressive wishes, as well as urges for action and mastery”

Clive, an eminent musician, has lost his memory, it now spans only a few seconds “every waking moment, the first waking moment”, you’d think total incoherence beckons yet when he is presented with one of the Bach 48, he not only plays it but seems to release “with his great musicianship and playfulness he can easily improvise, joke, play with any piece infused with intelligence and feeling” his ‘emotional connection’ provides a coherence while words differentiate, music is the joined-up experience and, describing this Sacks says “it is the claiming of the present, the ‘now’, that bridges the abyss”

He notes that “speech itself is not just a succession of words in the proper order it has tempo, rhythm and melody” and in my teens, before I owned a tape recorder I would sit in cafes, listening and notating the music of conversations I overheard when people are chatting, you can listen to the literal meaning of each word or to the music of their chat which, whatever the verbal subject, will reveal what they really mean and how they really feel

Music is the subtext of language, words may disguise but their music never does it always carries the emotional truth, its imperative is rhythmic and mellifluous music flows beneath language, as the creative flows beneath the conscious

“In the Tourettes community, in New York City recently”
Sacks took part in a drum circle and as he started drumming with them “all the ticcing disappeared within seconds, there was synchronisation suddenly and they came together as a group, performing in the moment with the rhythm” tourettes sufferers describe it as harnessing and focussing their energy

This phenomenon gets the wounded Sacks off a mountain “the leg was useless” he starts to row himself down and then “I fell into a rhythm, accompanied by a marching or rowing song before this I had muscled myself along, now I was musicked along”

And there’s Joe Simpson, touching the void, as for days he’s crawling across glacier and rock as Brown Girl In The Ring plays over and over again he remembers “at one point thinking, bloody hell, I’m going to die to Boney M”

Sacks says “after surgery and two weeks healing, I had strangely forgotten how to walk” until “the Mendelsohn fiddle concerto started to play itself in my mind” and immediately “the natural rhythm and melody of walking came back to me”

“Dr. P, who had lost the ability to recognise even common objects once mistook his own wife for a hat” but discovered a reason and rhyme to “the tasks of the day if organized in song” so “he sings all the time eating songs, dressing songs, bathing songs, everything but comes to a complete stop” if things goes wrong “he can’t do anything unless he makes it a song”

Beats, rhythms, notes, melodies are waves, all variations on a theme and the counterpoints of all these frequencies form the universal medium “rhyme and rhythm (from the Greek) mean measure, motion, stream” as each song carries the emotional momentum, the “articulate stream necessary to carry one along”

At a Grateful Dead gig, he observes that music solves the ‘binding problem’ “the music, the rhythm synchronised and transported” them, creating immediate unity just as rapid neurological oscillations bind different parts within brain and nervous system so rhythm binds together the individual nervous systems of a human community”

“William Harvey, in 1628, called animal movement ‘the silent music of the body’ neurologists speak of normal movement as having a ‘kinetic melody’, when walking our steps emerge in a rhythmical stream, a flow that is automatic and self-organizing”

“Parkinsonian ‘kinetic stutter’ can respond beautifully” to music’s attraction “Edith T. found even imagining music might restore her power of action” and soon “she could ‘dance out of the frame, like suddenly remembering myself, my own living tune’ an observer may note how slowed, are a parkinsonian’s movements but if music is present, its tempo and speed take precedence”

“I saw the extraordinary powers of music with our post-encephalitic patients its power to ‘awaken’ them at every level, it is music the parkinsonian needs, not only the metrical structure, the free movement of melody, its contours and trajectories its tensions and relaxations – but its ‘will’ and intentionality”

Of the preconscious experience of a composer, Berlioz writes poignantly “two years ago, when my wife’s state of health was involving me in a lot of expense, I dreamed a symphony on waking, I was going to begin writing it down, when suddenly” he thought of the months it’d take, the debts incurred, the impact on his life unable to serve his wife, “with these thoughts I shuddered and threw down my pen yet that night the symphony appeared again, more, I seemed to see it written I woke in feverish excitement, till my previous thoughts recurred and then I lay still, steeling myself against the temptation” to fulfil this endeavour “at last I fell asleep and when I awoke, all recollection of it, had vanished forever”

Not only does this energy-spun music self-organize
it wants us to write it down, it demands to have its say
as this inspirational thrill that almost seems to hypnotize
transmits a powerful will, where the will prescribes the way

Sacks writes of the “tendency to separate mind from the passions” – a wrong idea
after “a sudden rupture of a brain aneurism, Harry S., a brilliant mechanical engineer
remained severely impaired emotionally, none of the Scientific American articles he read
excited the ‘wonder’ he said, had been at the core of his life”, so nothing meant anything
yet every emotion returned “jovial, wistful, tragic, sublime” every time Harry would sing

Feelings connect us with the world, they make us tick
they’re electric intimations that live in the vibrations between things, like music
and “feeling is none other than thinking” said Rene Descartes, while Spinoza declared
that “mind and matter are two aspects of the same thing” or if you like, thought = Mc^2
and what are thoughts but communications, informing every choice
that speak to us directly as our own ‘inner voice’

What happens to our energies when we depart
the matter seeps back as a gift to the soil, that we know
but where does the body’s free energy, that works the heart
the mind and nervous system go

This is Tony Cicoria’s story
“I was talking to my mother on the phone
there was a little bit of rain, thunder in the distance
I remember a flash of lightning coming from the phone
next thing I was flying backwards, then forwards, bewildered
I looked around, saw my own body on the ground and said
to myself ‘oh shit I’m dead’

I saw people converging on the body
I saw a woman (she had been standing
waiting to use the phone right behind me)
position herself over my body, I floated up the stairs
my consciousness came with me” and floating away
“I saw my kids and realized they would be okay
then I was surrounded by a bluish-white light”
and had “an enormous feeling of well-being
and peace” in this tranquility “the highest
and lowest points of my life raced by me”
then “pure thought, pure ecstasy”

Tony feels he's "accelerating, being drawn up"
this is death, but there's nothing bad, things don't go black
"then, as I was saying 'this is the most glorious feeling I've ever had'
slam! I was back"

So maybe the energy goes back to the energy
back to the existential reality where 'now' is paramount
Sacks says "one cannot suppose that such events are pure fancy
very similar features are emphasised in every account"

Meanwhile, spiritual thoughts have entered sports, specifically the total focus that is Zen
it's the right state in which to play, so sportsfolk say 'serve the moment, not the outcome'
and hokus pokus, with this focus, building up 'momentum' so inspiration can happen
"you can never stop the waves, but you can learn how to surf" they say and then
there's 'visualisation', the imaginative state that improves performance
and all this happens when you live in the immediate experience

As a teenager, I was all messed up one time because this girl didn't fancy me
so my friend said "live in the moment, look at the kid on the bike, the tree
everything around you, all the time and you'll stop being unhappy"
and it worked, I'd been stuck, now I was living again
simple but I've never forgotten, and that's Zen
immersed in the scene, nothing in between
'sun is warm, grass is green'

Dramatist Dennis Potter, days from death, says from his window he can see
"the whitest frothiest blossomest blossom there ever could be
the now-ness of everything is wondrous, you have to experience it
the fact is that, if you see the present tense, boy do you see it"

So many philosophies try to fix things
as if they're broken and have to be mended
or as if we could rest in some blissful pretense
while the real world evolves, dynamic, open-ended
leaving us without fixed rules, but tuned to experience

From cradle to grave, life is urgent, now and now and now
where we never know what and we never know how
where the future's happening even as the past is unraveling
where zeitgeist is everything and we're forever travelling

Life's a journey, strange that we're acquisitive, almost a joke
perhaps it's the creeping entropy of us sedentary folk

I mention that I'm hoping to finish this project before the Vienna trip
and brother Richard asks 'what is it you're writing, actually?'
I say 'an investigation into the nature of things in verse'
'not exactly a popular form' he observes, wryly
'no' I admit, 'I'm writing this for me'

I think it's intellectual curiosity
but behind that lies a host of little personal demons, I'd prefer not to see
like why do I sit alone in a shed, like Nowhere Man, 'making all his nowhere plans for nobody'
so part of it is, that I struggle with 'facing the moment' – I'm fearful, lord knows why
because when I face up to things, they're not fearful, all I've to do is try
but often I don't and the fears build up and I allow myself to die

So there's a sort of shame in writing about stuff
you can't do yourself, feeling fear and proclaiming love
(those who can, do; those who can't, teach) yet, back to the wall
maybe I'm trying to lay the fears to rest once and for all
certainly, as I feel my way to the end of this piece
my fears increase and I'm ill at ease

Earlier, in a lonely mess, I had a go at my cowardice
I've spent the day getting deeper and deeper into distress
till I'm dangling over an abyss, what will I do when I finish this
and I realise that there is real danger in my continuing this way
living without hope, I can hear my ancient mentor, Heraclitus, say
"the soul is dyed the colour of its thoughts, think only things that can bear the light of day
your character is your choice, your integrity is the light that guides your way"

And yet, as I pace between kitchen and living room
trying to shake myself out of my rib-buckling gloom
before my first students arrive, I can see
if I turn myself around, so many options open to me
as if there's a switch, one way every possibility is frightful
the other way, it's all surprisingly exciting and delightful
but each time I've dared to hope, I've crashed eventually
so I'm in hiding
and I want to get back, I don't want darkness presiding
so, as two little students run in with their mum, I'm deciding
I've to do some very conscious systems-overriding

We only have fragments from Heraclitus, but he's great isn't he
here's one, 'time is a game that children play beautifully'

11 Travellers

“Give me a minute... ..first he pulled out a knife
started hitting me with it, then he pulled out a gun”
this is a US hitch-hiker, still shaking, scared for his life
“at one point I’m screaming ‘help help’ out the window
I knew, I thought I was going to be dead, I’ll never make
the same mistake, you carry a gun when you travel, a big one
you don’t have to hit nothing with it, I’m a Buddhist now, I’ve taken a vow
of non-violence and the guy was scary, I’m gonna phone my dad, tell him I love him”

‘American Nomads’ is a documentary by Richard Grant
once a nomad himself “all those years spent without an address
without any bills, living in my truck” it was his big ambition, he says
when young “to spend as many nights as possible just sleeping in the dirt”
he has “faith in the serendipity of the road” but admits that you can get hurt

Grant sees this old “gentleman of the road with some missing fingers” he decides to trust
and once he’s aboard “Shelton Parker, a loner with chronic wanderlust” begins to talk
he “apologises for the way he smells” then says “I don’t put out my thumb, I just walk
sometimes somebody’ll pull up and I’ll look at them and I’ll say ‘I’m just walking, no’
I’ve been married 5 times, got 2 daughters, wasn’t a good husband and father, so
I’m just looking for a place I want to stay and I haven’t found it yet ...I guess
stubbornness probably has a lot to do with it, I’ve been all over the US
no matter whether it’s raining on me, I’m soaking wet or freezing
or hot and sweating, I’ve never had a bad day out on the road”

Grant has a pleasing take on those who prefer to have no fixed abode
a definition of travellers he says he stole from French philosophy
“a nomad is someone who doesn’t feel stable when stationary
a nomad feels stable when experiencing velocity”

The thrill of velocity and the thrill of life itself, are linked
Ayrton Senna says “with mind power, determination, instinct
and experience, you can fly very high” and describes how “suddenly
I realised that I was no longer driving the car consciously, I was driving it
by a kind of instinct, only I was in a different dimension, the whole circuit
for me was a tunnel, I was just going, going, more and more” raising the bar
until it became clear “that I was in a different atmosphere than you normally are
it frightened me because I realized I was well beyond my conscious understanding”
and in life there is no landing, everything’s changing, it’s momentum that we need
as Ralph Waldo Emerson says “in skating over thin ice, our safety is in our speed”

The velocity that is Isabella flies through swiftly
out to the garden studio for her first ever lesson with me
she won't let Mum attend and as I show her how the fingers bend
to press each note down one by one, her fingers punch down like an axe
she really attacks each note while explaining that it's 'so my fingers get strong'
gleaned from Max presumably, but she is so bright, so quick and everything is fun
she makes up pieces, picks up sight-reading instantly, asking 'when can I sing my song'
which she sings beautifully, saying 'next week I'll bring my violin' my god I think, all three
I'm in a whirl from this clever girl with no time to relax, as Angela and Max appear
he tells me that he's off to secondary school later this year, it's hard to realise
I see the man as I listen to the boy improvise, applaud his wild imaginings
watch him stretch his wings as he soars through his pieces and sings
by the end, Isabella, Max and Angela form a rainbow around me
then all at once this vibrant trio swarm off home for tea

The desire to keep on moving also attracts the elderly
who, as Grant says "drive huge motorhomes" across Canada and USA
"there are 'recreational vehicle' parks with plug-in electricity, water and cable TV"
full of folk who've "sold their houses, said goodbye to their children" and flown away
vast flocks of migrating, whitehaired 'snowbirds' "now live this nomadic retirement
and untethered from responsibility, seem extraordinarily content"

Joe Ferguson runs the Last Call Tent Ministry, "part Scots-Irish, part Ossage Indian
he'll be here for a few weeks, then he'll pack up the tent and move on
he goes to Indian reservations to speak to the alcoholics there
he used to be an alcoholic, hard-rock miner, boozier, brawler"

He says at the meeting "you're not here by chance, you're here by opportunity"
and explains to Grant "we do probably 250, 300 meetings a year for the past 20
and I'm still as on fire, I'm 71, got saved at 37, at 44 I started in the tent ministry
praise the Lord and my wife went home to be with the Lord in January of 2010
I've been alone just over a year but I've never backed off, I just keep on truckin

This right here's a mansion compared with what we started out in
when my wife and I met on the road, we had a 21 foot trailer
we lived in that trailer with a young boy, home-schooling him
for 7½ years" yet Joe's life is heaven-sent, even now he's on his tod
"what you see is what I have, the most gorgeous white-and-purple tent
but everything you see, has been given to us, it's by the hand of God"

We all need faith in providence, whether or not the religious kind
as the future rushes in, a leap of faith's required, not to blind
not to disconnect, but to focus the mind

“There’s another big tribe, kids who travel as an act of rebellion” who’ve abandoned the rules “half-punk, half tramp, others call them gutterpunks or oogles, and oogles’ dogs are doogles it’s late morning and Elisabeth, Kevin and Bill are well into their stash of beer and vodka they want a ride to Yuma, down on the Mexican border, the thing is to keep moving away from low-wage jobs, family life so bad” that the whole home and family thing is a sick joke “when I was young my **** molested me” Elisabeth is in no doubt that “like, whoa, this shouldn’t be happening” yet when she dares to explain to her Mom “and my Mom told my Dad and my Dad kicked my **** out for some reason Dad thinks it’s my fault, so at 16, I got a freight train” “Bill was a self-harmer and a runaway, who says that his mother tried to get him locked up, she’s “a fat piece of shit, I hate her she sucks, like, her house, there’s just garbage everywhere disgusting, I hate my parents, oh yeah, they screwed me I like my life more now, these people are my family”

There’s “a big gathering of anarchists and misfits at some abandoned marine base a temporary autonomous zone, a TAZ” is how Grant describes this lawless place sauntering over to an old guy, he asks “any rules here?” here being ‘Slab City’ “well now, just don’t aggravate your neighbours, just plain old courtesy”

“Ted Coons is a full-time nomad who dropped out of the mainstream and now roams America in his jeep” living the alternative American dream

“Well, like a lot of American kids, when I was in my early twenties I went to work in that corporate game, I had a lot of ambition disease I spent 12 years on Wall Street, knew the end would come someday when my friends were buying Porsches, I was taking the subway banking away cash and managed to save up enough money to be free and not be dependent on anyone or anything it’s like leaving a beautiful woman but I never belonged there always a pretender and the last 3 years I’ve been wandering I haven’t spent much time anywhere

I’ve done all kinds of silly jobs, for fun mostly the income is nice, you know, not to spend the money I saved, I’ve lived in 5 or 6 states, visited 10 or 15 countries when you see these people living in these dilapidated vehicles some people might see that as some sort of sad experience I see it as the ultimate expression of freedom” that you clasp “when you live in a trailer, you’re not paying property taxes and you can move on anytime you want, that is the idea of freedom that so many people don’t truly grasp”

Suddenly it's time for the turnaround, time to have some fun
with Brighton's foremost florist, the one and only Matthew Gunn
he's brought a spring bouquet for Denise, "when's she back, how is she
she coming back this weekend, what eight shows then a gig, you're kidding me
where's a vase, I'll do it, just a cup of hot water thanks, so how've you been"
Matt's been trying to steer a positive course through a tricky divorce
he has a beautiful little daughter whom at times he's hardly seen

Stepping into the twilight garden he says "look at the blossom on that"
it's Bert and Jan's apple tree "beautiful isn't it" he says, admiring it we chat
he was a child chorister and I think singing again helped his feelings to release
he has the sweetest tenor voice, enough to charm the birds down from the trees
we've got about 15 songs that I can play and he can sing and it's breathtaking
his emotional commitment to the music he is making, heartwarming
I'm hoping that one day, he might like to do some performing

"When you off to Vienna, there's a heatwave over there"
he always knows the weather, but the smell in the air
as I wave goodbye to him, says spring's on its way
Matt calls "see you Paul, have a good holiday"

"Rodeo cowboys travel harder than anybody"

Grant is in a tent behind the arena at one of these rodeos
where "they're taping themselves up so their muscles won't be
ripped in two when an angry horse or an enraged bull" throws
them off, "Tommy McFarland rides the bucking broncos"

Tommy was raised on a ranch, so riding horses was always where it was at
"it's a fun way to live" he says "I dislocated my elbow in Calgary – I come back from that
then run these two bones up into my hand, broke it in 28 places" when Tommy went splat
and the "horse flipped over on me" but does he worry, no siree – "I come back from that
went into Houston, broke my femur, all the bones across my foot, tore my ACL in two"
and when it was healed, what did he do – "I come back from that
tore my bicep off my arm, rolled it up" but just the same
"I've been rodeoing ever since – it's all in the game"

Grant says the West wasn't won by cowboys but that disease
wiped out the nomadic tribes, as a new idea, private property
was enforced by inventing barbed wire fences, restricting free
movement of animals and people, he says "this whole country
has been divided up, had its spirit torn up, brutalized by fences
you got your 5-strand barbed wire fences, got your round-top fences
I'm talking about galvanized steel-tube fences, don't get me started on fences..."

“Howdy there, I’m Comfrey

I travel off and on, really hard the last three
years, but off and on since I was thirteen, I’m currently
eighteen now, it’s absolute freedom in a lot of ways, the only
problems, someone trying to take my stuff or take advantage of me
or cops harrassing me but other than that” Comfrey feels he’s completely free
“freedom from life in a box, sitting in an office nine to five, letting my
brain rot” he says he’s “addicted to travelling that road and I
am always looking for that next great adventure
to replace that one that just passed by”

Comfrey says the first great depression was the “golden age of hobos, I guess you could say
and we’re in the second” 20,000 still ride the freight trains and Grant used to do it in his day
Comfrey shows him a squat behind the track “they cut a hole in the fence and go way back
after dark, they’ll be coming in late, sit out here for a couple of hours and just wait, wow
there’s hopper tags here”, Luke Puke’s features a severed leg, Comfrey describes how
“I count the lug nuts on the wheel, if I can count every nut, then I personally feel
it’s not moving that fast, anything after that” he says and you come to harm
“the wind sucks you down and you’re going to lose a leg or an arm
you get caught under the wheels and they’ll just cut it off
and cauterize it right there, metal on metal grinding
that trick of the lug nuts is an old hobo trick
passed on to me when I started riding

Keep a knife and something blunt, a knife’s more an intimidation thing
if I get a sketchy vibe from somebody, if I’m hitch-hiking, I’ll start cleaning
my finger nails” with the knife, while his ‘Smiley’ “is an improvised weapon
blunt, kind of scary, but you’ve a full wrap on it, it has definitely kept me
out of some situations, I would rather scare somebody than hurt them
like, you don’t rape, you don’t steal, otherwise you end up floating
down the river or duck-taped to a train, you’re not welcome
in this if you break these small ethics, that’s all travelling
rules are, a set of morals, I mean, we all have them

It’ll be a sad sad day when you don’t see anyone try
to get from place to place with their thumb, or hopping
a train, that’s something I remember as a kid, just sitting by
the river bank, watching the train roll by and a couple of kids
or an old guy, on the back” or sitting on the boxcar floor
“that’ll be a sad day, when I’m sixty, seventy
if I make it through my tramping days
and don’t see that anymore

My dad's too busy getting high, old hippy stoner, dealing drugs, long as I
can remember, it's kind of why my Mom left him, so I guess it's kind of in my
genetics, like Mom was an old punk rocker, ran away from her home, I mean she
was always there, but working sixty hours a week to support me, it was always really
difficult, from the age of seven or five I had to take care of myself and find my way about
wake up, go to school, come home, make dinner, do homework, go to bed, so I got kicked out

I'd like to think I have a very strong personality, I've seen people break at a lot less stress
but a lot of times I've just got to keep going until I can lay down and then
I might cry myself to sleep or whatever else could happen
but I mean my dreams get crushed on a regular basis

A month or two ago, I was moving to Drago
to live with my girlfriend and about two weeks ago
I found out this isn't going to happen, so now I'm not
I don't know what love is" Comfrey says he's not old enough
"this is the first time I've felt this way so I'd like to think it's love
the train leaves out of here every night, at this point it doesn't really
matter where I go, east or west, once again my life's completely open to me"

My doorbell rings, it's Catherine, she's brought some Irish steak
we eat while we decide what musical we're going to make
not arduous and serious, nor Beauty and the Beast
set in a supermarket, yes a materialistic feast

There's love among the sausages, among the cheeses, strife
Catherine chimes in with a song 'let me be your bag for life'
there's a scanning and bagging dance, repetitive, ecstatic
where customers and staff enjoy the world on automatic

There's a chorus of ladies reading all those true life magazines
'all my skin has fallen off' and 'my dad just loves to smell my jeans'
'I was half-woman, half-tumour' 'I make breast-milk cheese for friends'
'he couldn't resist her, so Dad ate my sister' the mirth and merriment never ends

At one point a baby falls on the deli counter with a very shitty bum
in a trice it's sealed and weighed and priced and handed back to mum
but there's got to be some sort of story, okay maybe half the store's supplies
are being smuggled out, a fact which every shopper and member of staff denies
but the story's got to have a heart, so it turns out the boss is also fiddling
so no one's better than anyone else, yes and we'll end with a wedding
we've got it, says Cath putting on her coat, everyone's on the make
we agree to meet up to do some more, after my Vienna break

Grant's last nomad is Richard Bear, nicknamed 'Yogi'
"wandering these mountains for twenty-five years" living free
all the climbers, park rangers tell the story of this king of the back country

And the story goes that "this modern day mountain man"
first came here to commit suicide "oh well, yeah" he says, that was the plan
"I can eliminate my debt and my lack of being married by just stepping off El Capitan"

"He spent the night expecting to jump off a mile-high cliff" come the morn
but woke up awe-struck by the beauty and grandeur of these mountains at dawn
"I hadn't felt so content in years, maybe ever in my adult life, I just loved it" a man reborn

"I have never had any monetary goals so as soon as I've saved enough
I don't have to work for three months" yet, seasonally, he also often falls in love
short, seasonal affairs that end, so how does he face it "heartbreak? just kind of embrace it"

Does he get lost out here "I like to say I'm not lost, I just don't know where the trail is
I know which canyon I'm in, it does get tricky" Yogi Bear's prepared to confess
and as Grant watches on "he's gone, back into the frozen wilderness"

I've packed, I haven't finished this and we're Vienna bound
I step onto the first floor deck to stop these mad thoughts going round
as some cat or squirrel triggers the garden light and suddenly in the silent
night, Bert and Jan's cherry tree leaps out at me, heaven-sent
the 'frothiest, blossomest blossom there ever could be'
eternity in a moment

Richard Bear runs away to do himself in
and wakes up exactly where he needs to begin
in my experience it's no coincidence, a common event
it feels as if there's always something up ahead, a trail, a scent,
and why does it feel right when it is right, what is the engine of intent
well, no matter where I look, every atomic and biological transaction
is characterised by powerful forces of repulsion and attraction so
maybe I'm magnetised a certain way, and that's the way I go
and as I do, come face to face with what I am attracted to

To be running away from damage is one thing
but if you're carrying your damage with you
it weighs you down, obscures the view
you worry for those oogles, Comfrey too
so if you're carrying baggage, what can you do

12 Doctor Bob

Dandy, Sam and I arrive in a heatwave, dump our stuff and hotfoot it to Mum and Dad's hotel where with Richard, Karen, Joe, Kate, Eric, Margaret and Eliot, we perform the family carousel embracing each other in turn, Eliot's over from New Zealand, where he and his mother dwell he's a big jolly sensitive man, jokes pour out of him, so we're immediately under his spell as we squeeze into three taxis, snaking to the operetta, through a Vienna hot as hell

The operetta is silly and bad, I can see from the kids they'd like to stuff their ears with wool yet it's Margaret, almost deaf, who suddenly turns to Eric and loudly says "it's dreadful!" and she tells me this is probably the last time she'll see Eliot, as we chat at the interval she was a mum to Eliot when his parents split up, so her feelings for him are special

We finally emerge from the ancient frolicky nonsense, to a sprinkling of hot rain Mum, Dad and Karen grab a cab, my kids go off with Eliot, who is sure to entertain while I stride wetly off with my brother and his kids, once again we're in Dad's domain

The apartment's a cauldron, my only chance is the big concrete balcony, so I sit out there in shorts, an ironing board for a desk, on the fourth floor of ten, facing onto an inner square with a panorama of hundreds of lit rooms, where in one, a row is going on, in another an affair as the storm breaks and torrents of water pour, great jagged sheets of lightning electrify the air people watch from windows, it's a writer's dream, I stare until I just have to get on with the job and, amid the fierce electrical storm that snarls and crackles around me, zone in on Doctor Bob

From 1991 to 96, consultant psychiatrist, Bob Johnson
treats personality disorders in the Special Unit in Parkhurst Prison
for exceptionally dangerous and disturbed prisoners too violent for Broadmoor
he reduces violence by 92%, tranquilliser use by 95%, as if he's discovered a cure
for three years no alarm bells ring, unique globally, for any maximum security wing

Yet he's relieved of his post – in 'Emotional Health' he says "emotions are the single most vital ingredient in all human affairs and yet our academic institutions insist on treating them as anathema" and yet why would anyone doubt them, when "not a single human transaction from falling in love to nuclear war, can occur without them" it's our emotional self that drives "emotions move your mental furniture" and they have a single function "emotions save lives" just as pain tells you to remove your hand from the fire, so "the remedy for any fear rational or irrational, is to remove the danger" and when it's gone the way is clear but is removing irrational emotion, as easy as he makes it appear

"Instead of struggling to define all the emotions" the idea he'd have us employ is to "slot them into place on a scale" from those that attract to those that annoy where "at the negative end are fear and rage, at the positive end, delight and joy

Fear is the master emotion, when fear is abroad, all the happy, sunny emotions flee
big fear earns the label ‘terror’, fear can do what no other emotion can, paralyse thought”
Dr Bob describes two conditions, infancy, with overwhelming emotions, due to dependency
and adulthood, where emotions prompt action, they’re channeled so we can self-support

Emotions are huge in the helpless babe, whose only recourse is ‘waaaaah’
and the more Doctor Bob explored adults’ innermost feelings
“the more I found that every time, underneath the brouhaha
there was always a misplaced infantile emotion still pulling the strings”

Anger directed at the source of the problem may be healthy, coercive violence never can be
“so we need to distinguish realistic, from unrealistic emotions” and we find that inevitably
irrational emotions relate to some trauma in the past, not to something happening now
some event so terrifying “they rule out any possibility of rethinking the pain
they slam the lid on the box and vow never to open it again”

This ‘frozen terror’ underlies all serious emotional disorders, it paralyses the mind
reasoning is stillborn, too toxic even to be thought” blind even to the blindness
“and the crucial reason this simple underlying pattern remains obscure
is that the victim of it, is doing their level best to ensure that it does
our whole adult thrust” is its immunity “at the back of the mind”
where this frozen terror hides, invisibly controlling us

“Emotional education seeks to persuade the victim” of the view
“that today’s reality is invariably healthier – in fact, that is all it ever need do”
while, exploring the emotions of Britain’s most dangerous men, Dr Bob comes to learn
we’re all “born Lovable, Sociable, Non-violent and deep down it’s where we want to return”

In his work, he applies “Truth, Trust and Consent” as our sanity defenders
truth, because without it “emotions go berserk with hidden agendas”
trust, since without it, suspicion and fear quickly cloud the air
(he says “trust is a concept currently in need of repair”)
and consent, because only the actual person can give
the command to switch from negative to positive

The point is, can we choose, have we a voice
Bob Johnson says psychiatrists and scientists ignore it
it’s the curse of their “fully determined universe” as Samuel Johnson said
“all theory is against the freedom of will, all experience is for it” and Bob says until
“we deploy choice, intent and some freedom of will, sanity is impossible
only when the individual consents to re-evaluate the original threat
and allows it to slip back into the long-distant past
can ‘frozen terror’ be melted”

Three times, while working in Parkhurst, my life was threatened by murderers who found my enquiries too painful – take care when unpacking ‘frozen terrors’ they were established when for that individual, life and death hung in the balance” the victim is ignorant” yet “this ‘active’ ignorance” is just one of the terror’s talents as, “deeply buried there is a real agony – if we have an anxious parent” their anxiety gets built into our personality – appreciating that parents make mistakes but that we can pick and choose, is the key to emotional maturity (I overheard Eric in conversation saying he works by “a process of constant self-reevaluation”)

A mother no longer self-harms but feels her son, aged seven, also needs to mend “Sam chattered away” until “I asked ‘when your mother bit herself, you were frightened?’ his jaw dropped, no words passed his lips – he did, however, nod his head frantically” and yet when “I said ‘what did I say, Sam?’ he said ‘I forget’” the terror of his mum’s self-violence has sealed him up in self-defence, a no-man’s land defended by a wall of silence so, gently Bob repeats what he’d said and gently asks Sam to repeat it too “and then he did something he never dreamed he would ever do he began to repeat the unthinkable, his face brightened his hesitancy faded” he stopped being frightened and “the world did not come to an end”

The sheer ‘waaah’ of the babe should moderate as we become increasingly able Dr Bob describes blind rage in an adult as ‘infantile’, so while we think we’re stable we may be dancing to two tunes, happily there are only two such tunes about once we grasp this, we can sort these infantile ‘waaah’ emotions out

“I was recently responsible for a women’s unit where ninety percent harmed themselves” due to “a series of injustices all bottled up inside” when he first encouraged them to vent “this ‘trapped anger’ at a figment of their abuser, they were terrified” yet having finally given him a full blast of their distress, the episode lost its power” and their self-harming passed

“Too many of my clients arrive in adult life convinced they’re worse than useless beings that the world is grim and nothing can change things” so first be realistic: what is true if training can lead one way, it can lead in another, if some can be happy so can you “violence is learned, it can be unlearned, you can learn an optimistic positive view”

“You find drug addicts insisting” their life is great “anorexics determined to achieve a ridiculously low weight but you are whistling in the wind” without getting their consent to deal with denial and hopelessness, awaken their autonomy and intent “essentially what good parents do, in bringing the child up to be independent they need to stand on their own two feet” improve social skills, become self reliant

“Classifying psychiatric conditions down to ever smaller pigeonholes is akin to describing each wave on the beach” they’re forever changing, so imagine a spectrum, at one end would be the severe psychoses which “appear to break contact with reality, at the other, the neuroses” which “merely insist on trying to distort it” then watch someone display all these qualities “on the same afternoon” meanwhile “there is a hidden fear” and if the person agrees “if the cause can be found and rooted out, the malady can be declared cured this applies to psychosis as much as to any other disease

Emotions are always trying to save your life” so, if damage is what they do “they have got stuck in a timewarp and are advising that the best thing for you would be a really comfortable nursery – it is really a question of who’s in charge is it some monstrous timebomb from earlier years” still at large, making life grim “the switch to turn these obsolete emotions off is entirely in the hands of the victim” and this notion, that the individual can fully take charge of themselves, is presented as “an optimistic blueprint waiting to be implemented”

We’re off to meet Eric, who’s taking us on a journey from his birth until he leaves this city Eliot has asked and films as we travel to Dad’s first home, grey apartments, nothing pretty as world war one begins, his Mutti and Papa are in England, perhaps on their honeymoon Papa is interned as a labourer so it’s five years till they’re back and living here, where soon baby Eric is born and brother Freddie who’ll die in the next world war, and here Dad recalls as a child, watching trams, carts, carriages, the occasional car go by and the high grey walls

We pile back in the cabs and head for Ubersangweit, a lovely place, way up on top a white building near the woods and still a shop, which Mutti ran while Papa would go out to work and it was from here, that Dad heard shots as the civil war of ’34 raged below and then overheard two men brag that they’d chucked a jew out of a second-storey window

Now we’re off to the last place – from here, Dad ran down to the road beside the river Wien to watch Hitler, in Nazi salute, pass in an open military vehicle, hard to imagine the scene behind him the entire German army, as we walk down, Joe asks Eric how he knew to go Eric says “we all knew, it was on the radio, most people went to the centre to welcome him, Mutti told me I was not to go to school anymore A Nazi sentry was placed in front of the shop door to discourage people from trying to enter

Papa got Freddy out first, to Palestine, then Mutti as a domestic, to comply with British law Eric went next, to England as a ‘student’, he and Papa had a farewell meal, sitting on the floor no chairs anymore, and talking to the students at his old school earlier, describing the situation he was only emotional, when he remembered Papa’s tears, as his train pulled out of the station

When our cab cavalcade drops us back, I nip up to my balcony to work an hour or so it’s fine, there’s time, I’ve got all night to write and Denise arrives the day after tomorrow

Doctor Bob describes ‘Hollywood Syndrome’ where the goody fights the baddy who is intrinsically unlovable, unsociable, violent and must be killed or punished severely while Bob’s “most violent prisoners weren’t born that way and, given a chance, prefer not to be their victim had inadvertently stepped into the shoes of a figment, a parent usually, in one case the murderer said he saw his father’s face and having killed him, had five minutes grace” in which to think that he’d never again have to submit to his father’s sexual abuse “never once was this used as an excuse” they’d no idea why they’d used force and “once they found out” they were invariably full of remorse

“In this Special Unit in Parkhurst Prison, all the evidence pointed to the fact that we’d eliminated violence, it had been cured the statistics are irrefutable” and yet the authorities would not be lured because “this is a counter-cultural message, many especially Michael Howard the current Home Secretary, preferred to believe that violent men are born evil he applied to the High Court to try to stop the showing of a BBC Panorama documentary on my work” he failed, but closed the unit as he “disagreed with the principles, fundamentally”

So Michael Howard’s ‘frozen terror’ is showing – those who deny their humanity are bound to be reliant upon status, power and wealth for the joy in their lives as Doctor Bob says “If you do not feel lovable, at least you can feel wealthy” so the fucked-up ones rise and an aggressive fearful infantile world thrives

“Emotional health applies as much to societies, a quarter of all prisoners are US citizens, while Britain is now catching up fast, moving hell for leather we now have “more life-prisoners than all the other European nations put together” the gap “between wealthiest and poorest grows” yet the world won’t budge an inch even though, with “only a little of our vast excess of wealth” it would be a cinch to abolish “global poverty without even feeling the pinch”

We fear murderers, unwashed hoards, the unknown, that’s our ‘frozen terror’ which we disguise with Hollywood Syndrome rather than face our own error we hide the fear in our soul, as a shimmering quasar may mask a black hole projecting our bad feelings onto other cultures or ‘baddies’ who must die as if purging them purges us, whereas it simply compounds the lie

“Samantha had a target weight of four stone” an impossibility ‘how old are you?’ I asked her, she replied ‘three’ – she was twenty she began to recount the most dreadful happenings around the age of three the story is one illustration” why Dr Bob became “opposed to contemporary psychiatry” he says “the majority of the Parkhurst murderers had scars across their face, arms or chest” they self-molest, “so much is placed on the efficacy of punishment” yet here are a cluster “of souls, already heaping as much punishment on themselves as they can muster”

Locking away the problem increases it, in a person or in a prison
“it is not logical, so it must be irrational, the criminal justice system
removes offenders, only to release them even more bitter, brutalizing
criminals increases crime, while the victim, the real sufferer, receives nothing
I would insist the offender meet victim or family, so some form of restorative justice
is agreed” and never let any of them fly the coop until they’re fully fledged
they’ve understood, won’t re-offend and have resources for ensuring it
“when the true roots of violence are more widely acknowledged
then perhaps we can adopt more adult strategies for curing it”

We cannot apply coercion in one bit
if we wish to encourage responsible adult behavior in another bit
emotional health applies to us all – fear is the number one target, we need to reduce it”

There’s a parallel between emotional maturity and the development of democracy
“the need to bring the child up to be independent is just as crucial for a mature society
every citizen needs to become ever more independent, autonomous” allowed to take flight
to “have decisions devolved down from governing parent-figures to his or her level, as of right
if adults insist on behaving as infants the technical term I suggest is Serf” they wish to be servile
“it’s a question of who’s in charge, if you are, you are autonomous, responsible and adult, while
if you are not, you are dependent, others are responsible for you and you are infantile
nothing else is required to explain why we slaughter ourselves so regularly
with ever more elaborate weaponry” how can it be rational or good
“to manufacture real landmines, we are stuck in childhood

Our penal policies encourage precisely the things we wish to eliminate
clearly we need to lock mad axemen away but prisons breed serfs, at great
and increasing cost”, while in Parkhurst, drug-use drops, violence stops, these
offenders have “ceased being infantile and started taking Open University degrees”
believing if we don’t grow up, we’re lost “the pathway to emotional health” must entail
he says “the individual becoming ever less serf-like” and “on the wider social scale
ever-increasing autonomy and self-confidence globally, working energetically
towards reducing the global number of serfs to zero” and optimistically
“in the evolutionary stakes” Bob’s rooting for our “sociability”

Balcony, warm night, two gays embracing opposite, high above me
arm in arm, gazing out, they must be able to see the whole of the city

“A black flightless wasp climbs to the top of a grass stalk, emits a scent
males fly to her, land on her back, whisk her away” for the conjugal event
“how does she know, she has never seen a grass stalk, and why climb to the top
how long did it take to synthesize the correct pheromone” to entice this crop of males
how does it develop when it either works or it fails

Were there “legions of flightless moths” generations who failed in this event
and all because their “pheromonic chemistry” was out by one percent
“this is no random stab in the dark, it’s more like mini-intent”

“Attenborough’s documentary shows a plant mimicking the wasp
think about that, a plant imitating an insect” it’s hard to grasp
since we know “the plant has no sense organs whatsoever
it can’t see, hear, smell, touch nor taste its symbiotic ally”
where is the intelligence that guides it in this endeavour
“how on earth can it imitate it” unless it is innately clever

“On the end of a stalk, the plant grows a flower that looks like a female wasp and then
it emits a pheromone, exactly as does the female wasp herself” and yet, when
“the male wasp lands and attempts to fly off with her” it triggers stamen
on a hinge, which bounce up so the wasp’s back is covered in pollen

Thank you Dr Bob, I’ve got it – intent is creation’s central trait
as eastern religions describe ‘the vast will of the power to create’
when we judge, we disconnect from understanding as well as from health
since we disregard whatever we reject, whether that’s a murderer
the goodness of humanity or the value of understanding itself

Germany’s extreme punishment at the end of the first world war was reckoned
to have given rise to the second and when that ended, this was recognised
so, despite the genocide, a process of rehabilitation was devised

Rehabilitation makes a positive world appear
everyone feels included, just as exclusion increases fear
and it is painfully clear that those who seek to control, deny intent
and that this fixed view has a ‘frozen terror’ of freedom, change, development
yet how else can anything evolve – we experience it, the will to improve, to move on
in the lives we fashion, it’s the imperative we bring to each moment, the passion
and by the ancient hypothesis ‘as above, so below’ it may be shown
that if we possess will power, then the universe has its own
driving force, ever-evolving, future unknown

Even sitting here on this balcony writing, if I lose my intention, my drive
my train of thought, I’m lost and it’s true for every moment I’m alive
Mum is losing her short-term memory and her mind is not as quick
as Dad is going off to rest, she gets anxious, he senses her panic
he kisses and reassures her, she’ll be okay, she’ll be with us
quietly she says “I’m lost without you Eric”

13 The Hero With A Thousand Faces

Repetition comes easy, evolution works hard
for years Joseph Campbell trawls world mythology
until a pattern emerges and a hunch urges him forward
as he realises that, despite the kaleidoscope of faces and places
the endless plot devices, life-or-death crises and hair-raising chases
they are all the same story – there is only one story, the story he traces
in his 1949 work ‘The Hero With A Thousand Faces’

Novelists, poets like Dylan read his story
producer, Christopher Vogler, pens a precis
and distributes it as a ‘memo’ around showbiz
inspiring directors like Coppola, Kubrick, Spielberg
and most famously, George Lucas’ Star Wars trilogies

In a nutshell, as Vogler says, a hero (a pauper, a princess or Daffy Duck)
“ventures forth from the world of common day” chancing their luck
in “a region of supernatural wonder” – a scary world where
“fabulous forces are encountered and a victory is won”
this done, the hero gets the gift for those who dare
and returns with it, for everyone to share

“Prometheus ascended to the heavens, stole fire
from the gods and descended” sharing what he’d learned
“Jason sailed through the clashing rocks into a sea of marvels”
slayed “the dragon that guarded the Golden Fleece and returned”
described, both by Vogler in his memo and Campbell in his tome
as a series of fixed plotpoints, like the spokes of a wheel
that turns, where the story begins and ends at home

“The hero is introduced in his or her ordinary world” before the call to adventure occurs
“in Star Wars you see Luke Skywalker bored to death as a farm boy
before he tackles the universe”

Something shakes things up “maybe the land is dying
as in the King Arthur stories about the search for the Grail”
this ‘call to adventure’ is also a sign of the hero’s true vocation
whether forced by events or by some inner sense, they must not fail
whatever the situation, these are changes that he or she must face
“in detective stories, it’s the hero being offered a new case”

A pretty princess drops a golden ball into a deep pool, a frog promises to retrieve this symbol of her childhood, if he may become her partner, she says yes but as soon as the frog fulfills his part of the bargain, she runs off with her golden ball Campbell describes the frog as “the ‘herald’, the awakening of the self, the call the familiar has been outgrown, old ideals, emotional patterns no longer fit” and before long, the frog’s in her home, dining with her and going ‘ribbit’

‘Refusal of the call’ sometimes occurs since the hero may allow their fear of the unknown to hold sway and try to turn away “Luke refuses Obi Wan’s call, returns to his aunt and uncle” where he’s devastated “to find they’ve been barbecued by the Emperor’s stormtroopers”, suddenly he’s motivated

Once the hero has undertaken their own true adventure someone older and wiser appears, this is the hero’s ‘Mentor’ who guides and provides advice or magic charms as the hero embarks “in Jaws it’s the crusty Robert Shaw character who knows all about sharks”

The Twin War Gods of the Navaho come upon Spider Woman “a grandmotherly little dame who lives underground” who contrives to forewarn them of the “four places of danger” so they can devise a plan and gives them something “to subdue your enemies and preserve your lives” while, with Ariadne’s thread to guide him through the labyrinth, Theseus survives

‘Crossing the Threshold’ there’s no more doubt, the hero is now off the beaten track hoping for help, fearing attack “the spaceship blasts off, Dorothy sets out on the Yellow Brick Road, there’s no turning back”

Beyond the threshold, heroes traipse through dream landscapes following their quests along the ‘Road of Trials’ which has “produced a world literature of miraculous tests” each spell cast, more deadly than the last, it’s where “dragons have now to be slain and surprising barriers passed – again, again, and again” to prove the hero’s worth “in Casablanca, Rick’s Café is the setting” for this “passage into rebirth”

Finally, the hero reaches the heart of darkness, the pit of hell where both the object of the quest and the evil nemesis dwell it’s the life and death moment, the ‘Ordeal’ to settle the score it’s Theseus, descending into the labyrinth, to face the Minotaur

“Having survived, our hero now takes possession of the ‘Reward’ could be the Grail or some elixir, a special weapon, a magic sword” here, the hero may resolve a conflict with a parent, or someone bad as when “Luke Skywalker discovers that the dying Darth Vader” is his dad but he’s not out of the woods if, by nicking the goods, he’s made the gods mad

“The adventurer must still return” even as vengeful forces attack
now the quest is to get “the wisdom, fleece or sleeping beauty back”
“some of the best chase scenes come at this point” it’s the ‘Magic Flight’
chucking back obstacles left and right till home’s in sight, the story complete
with treasure or knowledge or love, anyway, the birdies tweet and life is sweet

Every tale, whether epic, domestic, comic or tragic is a variety of this single design
to Campbell it’s the outline for spiritual growth, where first we break a bond
as a child outgrows the familiar world and needs to move beyond

The future Buddha’s dad had shielded his boy, from all knowledge of age, sickness or death, for
it had been foretold that he’d either be world emperor or Buddha and dad favoured emperor
so he got his kid “three palaces and forty-thousand dancing girls” to titillate his every sense
yet “having exhausted the fields of fleshly joy and become ripe for other experience”
the gods revealed to the future Buddha, old age, sickness and death, so that’s good
Campbell says those who refuse their calls are “bound in by the walls of childhood”

The mentor, like Hawa’s good aunt, has a spirit that is free
“such a figure represents the benign, protecting power of destiny”
while the threshold is where fears and hopes must be relinquished
now only clear-minded action will prevent the hero being extinguished
sailing blind, those with Columbus “breaking the horizon of the medieval mind
had to be cozened like children, because of their fear” of the monsters they’d find

Campbell says “the ‘Wall of Paradise’, which conceals God from human sight
is described as the co-incidence of opposites” life and death, wrong and right
“the polarities, the clashing rocks, that bind the faculties to hope and fear
that crush the traveller but between which” the heroes can always steer
as Jason sails between them into a sea of marvels “so goes the hero
through the walls of the world, released from ego”

The road of trials, culminating in the ordeal “is a form of self-annihilation”
where you lose yourself to find yourself, to fulfil the transformation
within the “deepest chamber of the heart” and this is real reward
as parental conflicts are resolved, adult understanding starts
says Milarepa “if you realize the emptiness of all things
compassion will arise within your hearts”

The problems of return are self-evident here, why return to a world of hope and fear
of confrontational thinking, conflict, despair, yet the hero must bring the gift back to share
Campbell says the responsibility to return is often refused, even the Buddha hesitated
doubting “whether the message of realization could be communicated”

The gift has transformed the hero, who now embraces freedom
is, as Nietzsche says “champion of things becoming, not of things become”
the gift may also transform the world and the hero’s final test is to be thrust
hurled into the midst of those, who only trust what they already know
where bigoted defenses guard their senses and each ego is curled
about itself, yet “the hero must survive the impact of the world”

And so must I, I’ve had no sleep but we’re off to the Leopold, taxis to the door
lift to the third floor where Klimpt’s work glitters with all the riches of the orient
gorgeous women snake across each shimmering mosaic, in this splendid, opulent
fin de siècle realm, where not a question is asked, not a breeze stirs, yet the sight
is dazzling, beautiful and bright, Dandy and Margaret share their delight

I give each ecstatic confection a glance and run away
down to the ground floor to view the work of Klimpt’s protégé
the qualities they share do not prepare me for the brooding visions of Schiele
just ten years on, yet the difference is stark, these works are dark, a warning
as the twentieth century is dawning, as if Schiele could sense
the impending mass violence, just a few years away
on the surface nothing has changed and yet
this is what this returning hero has to say
I look at other contemporary artists next
and they’re all reading from the same subtext
why are paintings always shown in these clinical environments
like parts of people’s bleeding bodies nailed to the white walls, a form of violence
in the repressed sadistic sense, here lies art, ignored in its time, yet now somehow sublime
the attendants frown if you cough and Karen informs me that Richard’s been frogmarched off
I ask an official ‘would someone whose phone rang, be punished severely’ – no, I’m told, pity

Outside quaffing a drink, partaking of a bun
the others like the Klimpt, Schiele is no fun
they wouldn’t want a Schiele in their houses
they wouldn’t want the dark thoughts it arouses
Margaret finds it brutal, they can all live without it
as Karen says, if you can’t change it, why think about it
but, can humans be good, as Humanists claim, if we don’t care
if we turn away from anything that’s unpleasant, what hope is there

Back at the flat, Sam says he struggles to believe in people’s basic goodness
given the mess, the wars, the distress, the wanton blindness, so self-protective
freedom of thought comes at a cost, he says, but it’s worth it and proceeds to give
a swift psychological profile of each member of the family, every aim and objective
the futures they face, the lives that they live, to put my thoughts into perspective

The mythology's inside us, family relationships, sibling rivalries play out like Greek dramas in our passionate dreams and fantasies "myths are public dreams, dreams are private myths" Campbell says in their emotional interplay, we find our way and of the hero's journey that there's only one story because it plots the process of enlightenment by which we chart our development, such that "mythology is psychology"

He quotes folk recalling dreams, dreamers hanging onto dear life
"I am locked with my brother in a dark room, he has a large knife"
"I am going over a narrow bridge when it breaks suddenly"
"I am being drawn with great force through the sea"
one wants to enter "a dark cave" but faces doubt
in case having gone in, they can never get out

I could add my own, I'm running and all my clothes have gone
I'm endlessly falling, I'm on train tracks, hurtling along, and so on
the only thing that matters is whether each of us, as hero, survives
whether we can navigate our way up river as each new crisis arrives
this drama plays out in our dreams and then it plays out in our lives

Mum tells me, in her teens, she looked out of her window on the first floor
and thought, in quiet desperation, that "there must be something more"
what happens – suddenly she's in the Wrens and in a world at war

Me, I'm in a panic, failed all my exams, oh lord where is my life, what am I for
Mum says get a job, I'm a post office counter clerk, I'm on the floor
I don't know which way is up but I'm not doing this anymore
better find a mentor

In the war, Dad gets a thirst for knowledge and starts studying
Theo and others reveal to young Eric that, instead of being
victim to the cruelty of the times, he can apply reasoning

Jonny really mentors me and through Jonny, his mother Pam
I know it at the time, their world attracts me, in it I know who I am
in my experience, powerful emotions attend all these critical moments
because the future hangs in the balance

In retrospect, I can see my friends' lives right through from early days
their road of trials, their ordeals, the way they find their ways
and the reward, well Pam and Jonny write their plays
and get them on, for everyone to share
the hero's journey is everywhere

‘Touching The Void’ is the most frightening version I’ve ever read
two mountaineers set off, one gets injured and, tied to the other, falls off the side
the uninjured one, unable to hold on and giving up hope, saves himself by cutting the rope
the book is written by the injured man, Joe Simpson, who tries to find a way
having fallen into a crevasse, crawling day after day...

I’d been thinking of the book, so I googled it last week and found a news story
“Mountaineer Joe Simpson’s latest test of endurance, a Twitter row with angry GCSE students”
who have branded him a ‘crevasse wanker’, one wrote ‘I failed because of you, you owe to me!’
‘nope, you’re just crap at English’ Simpson shot back humorously, but the student didn’t agree
‘I am a student who learn English but you are a stupid, who fell down on the mountain
we are waiting you in Turkey!’ and finally, Simpson’s last tweet, after all the fuss
was “good night vile innocents, may you all seethe in bilious acid pus”
we live and learn, such are the joys of the hero’s return

“All things and beings are the effects of a ubiquitous power out of which they rise
which supports and fills them” in their lives and back into which they must finally go
“known to science as energy, to faiths as the power of God, by psychoanalysts as libido
its manifestation in the cosmos, is the structure and flux of the universe itself” – even so
the big picture is “normally impossible to see, ritual and myth facilitate the jump by analogy”
yet “myth is the penultimate, the ultimate is openness, God and the gods are symbols, merely
to awaken the mind and to call it past themselves” Campbell says that’s the real prize
and the hero is one who reopens our eyes

“It is not society that is to guide and save the creative hero
but precisely the reverse” and so the ordeal is something we all share
“not in the bright moments of the tribe’s great victories
but in the silences of personal despair”

The flow of experience isn’t just a revolving wheel
the wheel rolls forward, that’s what makes each challenge real
new experience provides new knowledge, which must be learned
evolution is carried by its individuals and it has to be earned

It’s a high-wire act, an act of faith, whatever the goal, you may not reach it
parents and teachers want kids to be safe, so they tend not to teach it
the hero’s journey is the path of experience, the way to the light
it says there’s a safety in momentum, as with an arrow’s flight

If there’s only one story, it seems to make sense as the fractal form, not of things but events
moving from question to answer at every scale, from a single current to the whole yin and yang
if so, it’s the DNA of movement itself, the hub of the whole shebang

It's a blueprint for life, certainly
in story-form, it's Dr Bob's road to emotional maturity
it's the scientific method, from hypothesis, through testing, to certainty
the blueprint for music, out on a journey, home to the keynote, forming a melody
the pattern for evolution, struggling from crisis to solution, even when the way is barred
where, say, cyanobacteria learns to use sunlight to photosynthesise and passes it on
seems to me it's the process by which everything moves forward
while repetition comes easy, evolution works hard

Denise flies in and we take taxis to a wine garden in Grinzing
in the foothills of the Vienna Woods where the wine comes flowing
from the vineyards above, where ländler are playing, lanterns glowing
there are eleven of us and we're all here now, with Denise we're complete
it's a warm night, everyone is well and life is sweet

Eliot sits beside Margaret, entertaining her and joking, in a reversal of the past
that she must eat all the food on her plate or it will be served up as her breakfast
his running commentary keeps us laughing and Margaret at the centre where she belongs
until the fiddler and the accordionist strike up and Eric starts singing Viennese songs

Other tables turn to watch and in between, he chats with them
as the musicians gather round him, everyone gets very merry
this is a hero's return and he sings with such vigour and vim
a little old black lady from Maryland, as pretty as a berry
comes over to Eric and tells him she loves him

Suddenly he swoops Margaret into his arms and, rafters ringing
they're dancing round and round, everyone clapping and singing
the room floats and I'm somewhere else, at one remove, watching
this little family perched on the edge of time, drinking wine in Grinzing
thinking, even now 'that was when' I mean, we'll not be here together again
I notice Eliot who lives on the other side of the world, who's filming everything
and to my shock, realise he's sobbing, cast my eyes around and know, just glancing
that we're all gone, I dare not look at anyone, just watch our two old heroes dancing

A moment on the balcony, late in the night, quietly exciting
with Denise asleep behind me, I come to the end of the writing
I'm tired of making notes and taking quotes, glad to finally be done
head still churning from all this learning, it's certainly been an education
I know it's changed the way I think, the spirit of life isn't something you define
it flows like wine, whatever book I've read and whatever viewpoints they endorse
when they've done all their explaining, it all comes down to the 'ubiquitous force'
which always steals their thunder, and so I'm left with 'openness', with wonder